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AUR Automotive Retail, Service and Repair Training Package

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Links

Companion Volume Implementation Guide is found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

AUR10120 Certificate I in Automotive Vocational Preparation

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification is an introductory qualification to the automotive retail, service and repair industries and an entry to further training in several sectors. It is designed for application in a highly supervised context, such as VET in Schools (VETiS) or other equivalent introduction or induction to industry environments. The range of technical skills and knowledge is limited.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 8

5 core units, plus

3 elective units, of which:

- all **3** units may be from the elective units listed below
- up to **2** units may be from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA001 Identify environmental and sustainability requirements in an automotive service or repair workplace

AURASA001 Apply automotive workplace safety fundamentals

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AURETR103 Identify automotive electrical systems and components
AURLTA101 Identify automotive mechanical systems and components
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Elective Units

AURAFA001 Use numbers in an automotive workplace
AURAFA002 Read and respond to automotive workplace information
AURAFA110 Identify routine problems in an automotive workplace
AURBTA001 Remove and tag bicycle components
AURBTA102 Adjust bicycles and components
AURBTJ101 Remove, repair and refit bicycle tyres
AURETK001 Identify, select and use low voltage electrical test equipment
AURETR001 Remove and tag automotive electrical system components
AURETR006 Solder electrical wiring and circuits
AURHTA001 Carry out heavy vehicle pre-repair cleaning
AURHTA003 Remove and replace heavy commercial vehicle ancillary components and accessories
AURHTJ001 Inspect heavy commercial vehicle wheels and tyres
AURJTA001 Carry out minor adjustments to motorcycles
AURJTA002 Remove and replace motorcycle components and accessories
AURJTJ003 Remove and refit motorcycle wheel and tyre assemblies
AURLTJ113 Remove, inspect and refit light vehicle wheel and tyre assemblies
AURPTA101 Carry out pre-repair operations to outdoor power equipment
AURPTA102 Carry out minor adjustments to outdoor power equipment
AURPTA106 Inspect and service line trimming systems and components
AURRTQ001 Inspect and service marine inboard propeller drive systems
AURRTR001 Inspect, service and maintain marine battery storage systems
AURTTA001 Remove and tag steering, suspension and braking system components
AURTTA002 Assist with automotive workplace activities
AURTTA003 Use and maintain basic mechanical measuring devices
AURTTA009 Carry out mechanical pre-repair operations
AURTTE003 Remove and tag engine system components
AURVTN001 Remove and tag vehicle body components
AURVTN008 Clean vehicle body and door openings
AURVTP006 Apply refinishing primers to vehicle surfaces

Qualification Mapping Information

Supersedes and is equivalent to AUR10116 Certificate I in Automotive Vocational Preparation.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR20116 Certificate II in Automotive Administration

Modification History

Release	Comment
Release 1	New qualification.

Qualification Description

This qualification reflects the role of individuals who perform a range of administrative tasks in the automotive retail, service and repair industry.

Entry Requirements

This qualification may be accessed by direct entry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Packaging Rules

Total number of units = 10

6 core units, plus

4 elective units, of which:

- up to **4** units may be chosen from the Elective Units listed below
- up to **2** units may be chosen from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

Core Units

Unit code	Unit title
AURAAA001	Work in an automotive administration role

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Unit code	Unit title
AURAFA003	Communicate effectively in an automotive workplace
AURAFA005	Write routine texts in an automotive workplace
AURAKA001	Use information technology systems
AURAQA001	Contribute to quality work outcomes in an automotive workplace
AURASA002	Follow safe working practices in an automotive workplace

Elective Units

Unit code	Unit title
AURACA001	Respond to customer needs and enquiries in an automotive workplace
AURAEA002	Follow environmental and sustainability best practice in an automotive workplace
AURAFA001	Use numbers in an automotive workplace
AURAFA002	Read and respond to automotive workplace information
AURAFA004	Resolve routine problems in an automotive workplace
AURAMA001	Work effectively with others in an automotive workplace
AURAMA002	Communicate business information in an automotive workplace
AURAMA004	Maintain business image in an automotive workplace
AURAQA003	Maintain quality processes in an automotive workplace
AURSAA001	Process customer complaints in an automotive workplace
AURSCA004	Carry out cash and non-cash payment operations
AURSCA011	Conduct online transactions in an automotive workplace
BSBFIA303	Process accounts payable and receivable
BSBINM202	Handle mail

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Unit code	Unit title
BSBWOR204	Use business technology
SIRXCEG001	Engage the customer

Qualification Mapping Information

Equivalent to AUR20112 Certificate II in Automotive Administration

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR20220 Certificate II in Automotive Air Conditioning Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a range of tasks relating to servicing and repairing air conditioning components and systems of cars and heavy vehicles in an automotive service and repair business.

The completion of this qualification enables an individual to apply for an *AAC02 - Refrigerant handling licence - qualified persons* (Automotive air conditioning licence). Users are advised that the scope of the licence will be contingent on unit of competency selection. Trainee licences also apply to those handling refrigerants while undertaking training. These licences are governed by the Australian Refrigeration Council, which should be contacted for further information.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 13

6 core units, plus

7 elective units, of which:

- all **7** units may be from the elective units listed below
- up to 3 units may be from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

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Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

AURETR112 Test and repair basic electrical circuits

AURETU103 Service air conditioning and HVAC systems

AURETU104 Diagnose and repair air conditioning and HVAC components

AURTTA118 Develop and carry out diagnostic test strategies

Elective Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace

AURAFA001 Use numbers in an automotive workplace

AURAFA002 Read and respond to automotive workplace information

AURAFA103 Communicate effectively in an automotive workplace

AURETR006 Solder electrical wiring and circuits

AURETR011 Install basic ancillary electrical systems and components

AURETR116 Read and apply vehicle wiring schematics and drawings

AURETU001 Install air conditioning systems

AURETU007 Overhaul air conditioning and HVAC system compressors

AURETU102 Recover vehicle refrigerants

AURETU105 Retrofit automotive air conditioning and HVAC systems

AURTTA009 Carry out mechanical pre-repair operations

AURTTA104 Carry out servicing operations

AURTTC103 Diagnose and repair cooling systems

AURTTE104 Inspect and service engines

AURTTK102 Use and maintain tools and equipment in an automotive workplace

AURVTA001 Prepare vehicles for customer use

Qualification Mapping Information

Supersedes and is equivalent to AUR20218 Certificate II in Automotive Air Conditioning Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR20320 Certificate II in Bicycle Mechanical Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a range of routine assembly and servicing tasks in the bicycle industry. It is suitable for entry into the bicycle retail, service and repair sector.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 16

8 core units, plus

8 elective units, of which:

- all **8** units may be from the elective units listed below
- up to **3** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURAFA001 Use numbers in an automotive workplace

AURAFA002 Read and respond to automotive workplace information

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AURASA102 Follow safe working practices in an automotive workplace
AURBTA104 Assemble new boxed bicycles for retail sale
AURBTJ101 Remove, repair and refit bicycle tyres
AURBTK101 Maintain specialised bicycle repair tools and equipment
AURBTV101 Remove, refit and adjust bicycle accessories

Elective Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace
AURAFA103 Communicate effectively in an automotive workplace
AURAFA104 Resolve routine problems in an automotive workplace
AURAFA105 Write routine texts in an automotive workplace
AURAMA001 Work effectively with others in an automotive workplace
AURAMA102 Communicate business information in an automotive workplace
AURAQA001 Contribute to quality work outcomes in an automotive workplace
AURATA001 Identify basic automotive faults using troubleshooting processes
AURBCA002 Select and adjust bicycles to fit riders
AURBCA101 Work in a retail bicycle environment
AURBTA103 Assemble bicycles
AURBTA108 Disassemble and pack a bicycle for transport
AURBTB002 Service bicycle hydraulic braking systems
AURBTB101 Service and repair bicycle mechanical braking systems
AURBTD101 Service bicycle steering systems
AURBTD102 Service bicycle suspension systems
AURBTJ102 Service bicycle wheels and hubs
AURBTQ001 Service bicycle drivetrain systems
AURBTR103 Retrofit electric drive train systems to bicycles
AURBTR104 Diagnose and repair electric bicycles
AURSAA001 Process customer complaints in an automotive workplace
AURSCA102 Present automotive products and services for sale
AURSCA103 Apply sales procedures in an automotive workplace
AURSCA105 Sell automotive products and services
AURSCA106 Promote automotive products and services
AURTTA104 Carry out servicing operations
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTK102 Use and maintain tools and equipment in an automotive workplace
BSBOPS304 Deliver and monitor a service to customers
BSBXTW301 Work in a team
BSBPRO401 Develop product knowledge
BSBPEF202 Plan and apply time management

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BSBPEF301 Organise personal work priorities
MEM11011 Undertake manual handling*
MEM13015 Work safely and effectively in manufacturing and engineering
MEM16006 Organise and communicate information*
MEM18001 Use hand tools*
MEM18002 Use power tools/hand held operations*
SIRRINV001 Receive and handle retail stock
SIRRINV002 Control stock
SIRXCEG001 Engage the customer
TLIA3039 Receive and store stock

*Note the following prerequisite unit requirements.

UNIT IN THIS QUALIFICATION	PREREQUISITE UNIT(S)
MEM11011 Undertake manual handling	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM16006 Organise and communicate information	MEM13015 Work safely and effectively in manufacturing and engineering
MEM18001 Use hand tools	MEM11011 Undertake manual handling MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM18002 Use power tools/hand held operations	MEM11011 Undertake manual handling MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information

Qualification Mapping Information

Supersedes and is equivalent to AUR20316 Certificate II in Bicycle Mechanical Technology.

Links

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AUR20420 Certificate II in Automotive Electrical Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a range of tasks relating to installing, assembling and servicing electrical components and systems of motor vehicles in the automotive electrical installation, service and repair technology sector.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 16

10 core units, plus

6 elective units, of which:

- all **6** units may be from the elective units listed below
- up to **3** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

AURETK002 Use and maintain electrical test equipment in an automotive workplace

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AURETR006 Solder electrical wiring and circuits
AURETR007 Apply knowledge of automotive electrical circuits and wiring systems
AURETR008 Remove and replace electrical units and assemblies
AURETR009 Install vehicle lighting and wiring systems
AURETR011 Install basic ancillary electrical systems and components
AURETR112 Test and repair basic electrical circuits
AURETR115 Inspect, test and service batteries

Elective Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace
AURAFA001 Use numbers in an automotive workplace
AURAFA002 Read and respond to automotive workplace information
AURAFA103 Communicate effectively in an automotive workplace
AURAFA105 Write routine texts in an automotive workplace
AURAMA001 Work effectively with others in an automotive workplace
AURAMA102 Communicate business information in an automotive workplace
AURATA001 Identify basic automotive faults using troubleshooting processes
AURATA002 Read, interpret and apply engineering drawings
AURATA003 Produce drawings from design concepts
AURETK001 Identify, select and use low voltage electrical test equipment
AURETR005 Install automotive security systems and components
AURETR010 Repair wiring harnesses and looms
AURETR013 Inspect, test and service charging systems
AURETR014 Inspect, test and service starting systems
AURETR042 Remove, refit and operate electrical components following body repair activities
AURETR116 Read and apply vehicle wiring schematics and drawings
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURETU001 Install air conditioning systems
AURETU102 Recover vehicle refrigerants
AURETU103 Service air conditioning and HVAC systems
AURETU104 Diagnose and repair air conditioning and HVAC components
AURETU105 Retrofit automotive air conditioning and HVAC systems
AURPTR102 Test and service electric outdoor power equipment
AURRTR001 Inspect, service and maintain marine battery storage systems
AURSCA101 Select and supply automotive parts and products
AURSCA103 Apply sales procedures in an automotive workplace
AURTTA008 Produce patterns and templates
AURTTA009 Carry out mechanical pre-repair operations
AURTTA104 Carry out servicing operations

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AURTTA118 Develop and carry out diagnostic test strategies
AURTTE104 Inspect and service engines
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTK102 Use and maintain tools and equipment in an automotive workplace
AURVTT003 Remove and replace automotive and marine interior trim components
AURVTT004 Trim vehicle components
AURVTT005 Select trim and fabric materials
AURVTT006 Apply trimming adhesives
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections

Qualification Mapping Information

Supersedes and is equivalent to AUR20416 Certificate II in Automotive Electrical Technology.

Links

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AUR20520 Certificate II in Automotive Servicing Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a range of servicing tasks in the automotive retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 20

13 core units, plus

7 elective units, of which:

- all **7** units may be from the elective units listed below
- up to **4** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

AURATA001 Identify basic automotive faults using troubleshooting processes

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AURETR115 Inspect, test and service batteries
AURTTA104 Carry out servicing operations
AURTTB101 Inspect and service braking systems
AURTTC001 Inspect and service cooling systems
AURTTD002 Inspect and service steering systems
AURTTD004 Inspect and service suspension systems
AURTTE104 Inspect and service engines
AURTTK102 Use and maintain tools and equipment in an automotive workplace
AURTTQ001 Inspect and service final drive assemblies
AURTTQ103 Inspect and service drive shafts

Elective Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace
AURAFA103 Communicate effectively in an automotive workplace
AURETR125 Test, charge, and replace batteries and jump-start vehicles
AURLTJ102 Remove, inspect, repair and re-fit light vehicle tyres and tubes
AURRGA001 Launch and recover vessels using a trailer
AURRGA003 Moor motor-driven vessels
AURRTA001 Inspect and service deck, hull and cabin equipment
AURRTA003 Winterise vessels and engine systems
AURRTA006 Water test vessels
AURRTA009 Recommission vessels and engine systems
AURRTE001 Carry out wet run tests on vessel outboard engines
AURRTE002 Inspect and service marine outboard engines
AURRTE003 Inspect and service marine inboard engines
AURRTE010 Test marine engines in water tanks
AURRTQ001 Inspect and service marine inboard propeller drive systems
AURRTQ002 Inspect and service marine jet drive propulsion systems
AURRTR001 Inspect, service and maintain marine battery storage systems
AURRTX001 Inspect and service marine outboard and stern drive transmissions
AURRTX002 Inspect and service marine inboard transmissions
AURTTA006 Inspect and service hydraulic systems
AURTTA010 Service and repair trailers up to 4.5 tonnes
AURTTA105 Select and use bearings, seals, gaskets, sealants and adhesives
AURTTD001 Inspect steering systems
AURTTD003 Inspect suspension systems
AURTTF101 Inspect and service petrol fuel systems
AURTTF102 Inspect and service diesel fuel injection systems
AURTTJ011 Balance wheels and tyres

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AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTX002 Inspect and service manual transmissions
AURTTX003 Inspect and service automatic transmissions
AURTTX004 Inspect and service hydrostatic transmissions
AURTTX015 Inspect and service clutch systems
AURTTZ001 Inspect and service emission control systems
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
BSBPEF202 Plan and apply time management
BSBWHS332X Apply infection prevention and control procedures to own work activities
BSBXTW301 Work in a team
TLID1001 Shift materials safely using manual handling methods

Qualification Mapping Information

Supersedes and is equivalent to AUR20516 Certificate II in Automotive Servicing Technology.

Links

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AUR20720 Certificate II in Automotive Vocational Preparation

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a limited range of tasks relating to identifying and inspecting mechanical and electrical components and systems of light vehicles, heavy vehicles, outdoor power equipment, bicycles, marine craft and motorcycles. This qualification also covers the skills and knowledge required to perform minor maintenance and repair of an automotive vehicle body. The range of technical skills and knowledge is limited.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 12

7 core units, plus

5 elective units, of which:

- all **5** units may be from the elective units listed below
- up to **2** units may be from a Certificate I or Certificate II qualification in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

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AURAEA002 Follow environmental and sustainability best practice in an automotive workplace
AURAFA103 Communicate effectively in an automotive workplace
AURAFA104 Resolve routine problems in an automotive workplace
AURASA102 Follow safe working practices in an automotive workplace
AURETR103 Identify automotive electrical systems and components
AURLTA101 Identify automotive mechanical systems and components
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Elective Units

AUMAFA001 Apply for jobs and undertake job interviews
AURAFA009 Carry out research into the automotive industry
AURAFA105 Write routine texts in an automotive workplace
AURAMA001 Work effectively with others in an automotive workplace
AURAQA001 Contribute to quality work outcomes in an automotive workplace
AURBTA001 Remove and tag bicycle components
AURBTJ101 Remove, repair and refit bicycle tyres
AURBTK101 Maintain specialised bicycle repair tools and equipment
AURBTQ001 Service bicycle drivetrain systems
AURBTV101 Remove, refit and adjust bicycle accessories
AURETK001 Identify, select and use low voltage electrical test equipment
AURETK003 Operate electrical test equipment
AURETR001 Remove and tag automotive electrical system components
AURETR002 Inspect heavy vehicle battery storage systems
AURETR006 Solder electrical wiring and circuits
AURETR009 Install vehicle lighting and wiring systems
AURETR048 Construct and test basic electronic circuits
AURETR115 Inspect, test and service batteries
AURETR146 Remove and refit vehicle batteries
AURETR147 Recharge vehicle batteries
AURHTD001 Inspect heavy commercial vehicle suspension systems
AURHTF001 Inspect heavy commercial vehicle fuel systems
AURHTJ001 Inspect heavy commercial vehicle wheels and tyres
AURHTQ001 Inspect heavy commercial vehicle driveline components
AURJTA001 Carry out minor adjustments to motorcycles
AURJTA002 Remove and replace motorcycle components and accessories
AURJTD001 Inspect motorcycle suspension systems
AURJTD002 Inspect motorcycle steering systems
AURJTJ003 Remove and refit motorcycle wheel and tyre assemblies
AURPTA101 Carry out pre-repair operations to outdoor power equipment

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AURPTA102 Carry out minor adjustments to outdoor power equipment
AURPTA103 Service and repair rotary cutting systems
AURPTA106 Inspect and service line trimming systems and components
AURPTE102 Inspect and service outdoor power equipment engines
AURRTE001 Carry out wet run tests on vessel outboard engines
AURRTE002 Inspect and service marine outboard engines
AURRTQ001 Inspect and service marine inboard propeller drive systems
AURRTQ002 Inspect and service marine jet drive propulsion systems
AURRTR001 Inspect, service and maintain marine battery storage systems
AURTTA001 Remove and tag steering, suspension and braking system components
AURTTA002 Assist with automotive workplace activities
AURTTA003 Use and maintain basic mechanical measuring devices
AURTTA009 Carry out mechanical pre-repair operations
AURTTA105 Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA127 Carry out basic vehicle servicing operations
AURTTB007 Remove and replace brake assemblies
AURTTC004 Remove and replace radiators
AURTTD006 Remove and replace vehicle front suspension springs
AURTTD007 Remove and replace steering assemblies
AURTTE003 Remove and tag engine system components
AURTTE006 Remove and replace conventional engine assemblies
AURTTE007 Dismantle and assemble single cylinder four-stroke petrol engines
AURTTE008 Dismantle and assemble multi-cylinder four-stroke petrol engines
AURTTE009 Remove and replace engine cylinder heads
AURTTJ003 Remove and replace wheel and tyre assemblies
AURTTQ002 Remove and refit driveline components
AURTTX001 Remove and tag driveline components
AURTTX012 Dismantle and assemble conventional manual transmissions
AURTTX013 Remove and replace clutch assemblies
AURVTA005 Clean vehicles
AURVTK001 Use and maintain vehicle body repair hand tools
AURVTN003 Remove and store vehicle body components
AURVTN039 Set up body alignment equipment on vehicles
AURVTN041 Remove and realign vehicle body panels
AURVTN138 Carry out basic repairs to vehicle body panels
AURVTN140 Repair vehicle plastic components
AURVTP006 Apply refinishing primers to vehicle surfaces
AURVTP008 Clean and polish vehicle paint surfaces
AURVTP129 Prepare surface and prime repaired body panels
AURVTP130 Apply paint to vehicle body panels

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AURVTP131 Cut and polish painted vehicle body panels
AURVTP132 Prepare and mask vehicle body panel surfaces
AURVTT008 Clean vehicle interior trim
AURVTW010 Set up and use welding equipment

Qualification Mapping Information

Supersedes and is equivalent to AUR20716 Certificate II in Automotive Vocational Preparation.

Links

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AUR20820 Certificate II in Outdoor Power Equipment Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a limited range of tasks in the outdoor power equipment retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 16

8 core units, plus

8 elective units, of which:

- all **8** units may be from the elective units listed below
- up to **3** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURAFA001 Use numbers in an automotive workplace

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AURAFA002 Read and respond to automotive workplace information
AURASA102 Follow safe working practices in an automotive workplace
AURETR006 Solder electrical wiring and circuits
AURETR115 Inspect, test and service batteries
AURPTE102 Inspect and service outdoor power equipment engines
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Elective Units

AURPTA101 Carry out pre-repair operations to outdoor power equipment
AURPTA102 Carry out minor adjustments to outdoor power equipment
AURPTA103 Service and repair rotary cutting systems
AURPTA104 Service and repair drum cutting systems
AURPTA105 Service and repair chainsaw cutting systems
AURPTA106 Inspect and service line trimming systems and components
AURPTA107 Service and repair post boring systems
AURPTA108 Service and repair post hole digging systems
AURPTA109 Service and repair reciprocating cutting systems
AURPTA110 Inspect and service pumping systems
AURPTA111 Diagnose and repair pumping systems
AURPTE103 Diagnose and repair outdoor power equipment engines
AURPTR101 Test and service 240 volt portable generators
AURTTF101 Inspect and service petrol fuel systems
AURTTX102 Inspect and service manual transmissions

Qualification Mapping Information

Supersedes and is equivalent to AUR20816 Certificate II in Outdoor Power Equipment Technology.

Links

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AUR20920 Certificate II in Automotive Body Repair Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a range of tasks on vehicle bodies in the automotive retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 13

5 core units, plus

8 elective units, of which:

- at least **3** units must be from one of the Specialist Elective Groups A to C below
- of the remaining units required to make up the elective unit total:
  - up to **4** may be from any Specialist Elective Group and/or the general elective units listed below
  - up to **3** may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

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AURAFA002 Read and respond to automotive workplace information
AURAMA001 Work effectively with others in an automotive workplace
AURASA102 Follow safe working practices in an automotive workplace
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Specialist Elective Units

Group A: Automotive Body Repair
AURVTN003 Remove and store vehicle body components
AURVTN007 Remove and clean salvageable vehicle components
AURVTN137 Test vehicle components for correct operation
AURVTN042 Dismantle vehicle components
AURVTN102 Carry out non-structural vehicle panel repairs
AURVTN113 Carry out paint-less dent repairs on vehicle body panels
AURVTN116 Repair vehicle body panels using filler
AURVTT002 Carry out repairs and alterations to automotive and marine trim
AURVTT003 Remove and replace automotive and marine interior trim components
AURVTT004 Trim vehicle components

Group B: Automotive Painting
AURVTP006 Apply refinishing primers to vehicle surfaces
AURVTP020 De-nib, buff and polish vehicle painted surfaces
AURVTP101 Remove paint from vehicle painted surfaces
AURVTP103 Prepare vehicle spray painting equipment for use

Group C: Glazing
AURVTG102 Remove and install rubber glazed windscreens
AURVTG104 Remove and install direct glazed windscreens
AURVTG109 Remove and install vehicle fixed body glass

General Elective Units

AURAFA001 Use numbers in an automotive workplace
AURETH101 Depower and reinitialise battery electric vehicles
AURETR042 Remove, refit and operate electrical components following body repair activities
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURETU102 Recover vehicle refrigerants
AURLTJ113 Remove, inspect and refit light vehicle wheel and tyre assemblies
AURVTA001 Prepare vehicles for customer use
AURVTG006 Apply vehicle window tinting

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AURVTG007 Clean vehicle glass surfaces
AURVTG011 Install side vehicle windows
AURVTG101 Repair laminated glass windscreens
AURVTG103 Remove and install butyl sealed windscreens
AURVTG110 Remove and install vehicle movable body glass
AURVTK001 Use and maintain vehicle body repair hand tools
AURVTN005 Remove and replace adhesive attached components on vehicles
AURVTN008 Clean vehicle body and door openings
AURVTN009 Clean vehicle engines and engine components
AURVTN010 Clean vehicle underbody
AURVTN104 Remove, replace and align bolt-on vehicle body panels and components
AURVTN111 Remove and install vehicle rear vision mirrors
AURVTP002 Mask vehicle panels and components
AURVTP005 Apply rust prevention and sound deadening materials to vehicle body components
AURVTP008 Clean and polish vehicle paint surfaces
AURVTP019 Prepare and paint plastic and composite vehicle surfaces
AURVTP020 De-nib, buff and polish vehicle painted surfaces
AURVTP021 Restore vehicle body exterior paint
AURVTP110 Prepare and operate vehicle paint drying equipment
AURVTP113 Prepare vehicle substrates for refinishing
AURVTT001 Carry out sewing repairs to automotive and marine trim
AURVTT003 Remove and replace automotive and marine interior trim components
AURVTT005 Select trim and fabric materials
AURVTT006 Apply trimming adhesives
AURVTT007 Clean plastic trim and fittings of vehicles
AURVTT008 Clean vehicle interior trim
AURVTT009 Remove and replace vehicle and vessel seats and fittings
AURVTT021 Select and apply adhesives in automotive and marine service and repair work
AURVTW007 Carry out oxyacetylene thermal heating and cutting on vehicle body sections
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
BSBWHS332X Apply infection prevention and control procedures to own work activities

Qualification Mapping Information

Supersedes and is equivalent to AUR20916 Certificate II in Automotive Body Repair Technology.

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Links

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AUR21020 Certificate II in Motor Sport Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a limited range of tasks on competition vehicles in the motor sport industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 16

7 core units, plus

9 elective units, of which:

- all **9** units may be from the elective units listed below
- up to **3** units may be from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

AURLTJ102 Remove, inspect, repair and refit light vehicle tyres and tubes

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AURMGA101 Set up and dismantle temporary work location and equipment at motor sport events

AURMMA101 Operate in a motor sport environment

AURMTA101 Prepare and service light competition vehicles

AURTTK102 Use and maintain tools and equipment in an automotive workplace

Elective Units

AURATA001 Identify basic automotive faults using troubleshooting processes

AURATA002 Read, interpret and apply engineering drawings

AURATA003 Produce drawings from design concepts

AURETR006 Solder electrical wiring and circuits

AURETR009 Install vehicle lighting and wiring systems

AURETR010 Repair wiring harnesses and looms

AURETR011 Install basic ancillary electrical systems and components

AURETR026 Remove, replace and program electrical and electronic units and assemblies

AURETR042 Remove, refit and operate electrical components following body repair activities

AURETR112 Test and repair basic electrical circuits

AURETR115 Inspect, test and service batteries

AURETR125 Test, charge and replace batteries and jump-start vehicles

AURLTE001 Remove and install light vehicle engine assemblies

AURLTJ011 Select light vehicle tyres and wheels for specific applications

AURLTJ013 Remove, inspect and refit light vehicle wheel and tyre assemblies

AURMBA101 Transport light competition vehicles and support equipment

AURMDA002 Assist with officiating duties at motor sport events

AURMDA101 Develop and update motor sport industry knowledge

AURMLA001 Apply motor sport rules and regulations when officiating

AURMSA001 Follow motor sport safety and risk management procedures

AURMTA006 Perform torquing and fastening on motor sport competition vehicles

AURTTA104 Carry out servicing operations

AURTTB012 Attach friction materials and radius grind

AURTTB013 Machine brake drums and brake disc rotors

AURTTB101 Inspect and service braking systems

AURTTC001 Inspect and service cooling systems

AURTTC002 Repair radiators

AURTTD001 Inspect steering systems

AURTTD002 Inspect and service steering systems

AURTTD003 Inspect suspension systems

AURTTD004 Inspect and service suspension systems

AURTTE104 Inspect and service engines

AURTTF101 Inspect and service petrol fuel systems

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AURTTJ011 Balance wheels and tyres
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTQ001 Inspect and service final drive assemblies
AURTTQ103 Inspect and service drive shafts
AURTTS101 Fabricate exhaust systems and components
AURTTW001 Carry out soft soldering techniques
AURTTX102 Inspect and service manual transmissions
AURTTX103 Inspect and service automatic transmissions
AURTTZ001 Inspect and service emission control systems
AURTTZ102 Diagnose and repair exhaust systems
AURVTS006 Fabricate automotive and marine trim components
AURVTW002 Carry out oxyacetylene brazing of components
AURVTW006 Carry out thermoplastic welding on vehicle trim components
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components
AURVTW104 Carry out tungsten inert gas welding
AURVTW105 Carry out spot welding
AURVTW109 Carry out basic gas metal arc welding
MSMENV272 Participate in environmentally sustainable work practices

Qualification Mapping Information

Supersedes and is equivalent to AUR21016 Certificate II in Motorsport Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR21120 Certificate II in Automotive Sales

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform sales-related tasks in the automotive service and repair sector.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 12

5 core units, plus

7 elective units, of which:

- **3** units must be from one of the Specialist Elective Groups A to C
- of the remaining **4** units required to make up the elective unit total:
  - all **4** may be from the Specialist Elective Groups and general elective units listed below
  - up to **2** may be from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace

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AURASA102 Follow safe working practices in an automotive workplace
AURSCA102 Present automotive products and services for sale
AURSCA106 Promote automotive products and services
AURSLA001 Comply with legal requirements when selling automotive products and services

Specialist Elective Units

Group A: Service Station Sales and Service
AURSCA105 Sell automotive products and services
SIRRINV002 Control stock
SIRXSLS002 Follow point-of-sale procedures
SIRXWHS003 Maintain workplace safety*
TLIA2020 Replenish stock

Group B: Bicycle Sales
AURAMA001 Work effectively with others in an automotive workplace
AURBTA104 Assemble new boxed bicycles for retail sale
AURBTV101 Remove, refit and adjust bicycle accessories
AURSCA105 Sell automotive products and services
SIRRINV002 Control stock
SIRXWHS003 Maintain workplace safety*

Group C: Outdoor Power Equipment Sales
AURACA103 Build customer relations in an automotive workplace
AURSCA103 Apply sales procedures in an automotive workplace
SIRRINV001 Receive and handle retail stock
TLIA2013 Receive goods

General Elective Units

AURACA103 Build customer relations in an automotive workplace
AURAEA002 Follow environmental and sustainability best practice in an automotive workplace
AURAFA001 Use numbers in an automotive workplace
AURAFA002 Read and respond to automotive workplace information
AURAFA103 Communicate effectively in an automotive workplace
AURAFA104 Resolve routine problems in an automotive workplace
AURAMA004 Maintain business image in an automotive workplace
AURAQA001 Contribute to quality work outcomes in an automotive workplace
AURSCA103 Apply sales procedures in an automotive workplace
AURSCA104 Carry out cash and non-cash payment operations

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AURSCA111 Conduct online transactions in an automotive workplace
BSBWHS332X Apply infection prevention and control procedures to own work activities
ICTWEB201 Use social media tools for collaboration and engagement
SIRRRTF001 Balance and secure point-of-sale terminal
SIRXSLS002 Follow point-of-sale procedures

*Note the following prerequisite unit requirements.

UNIT IN THIS QUALIFICATION	PREREQUISITE UNIT
SIRXWHS003 Maintain workplace safety	SIRXWHS002 Contribute to workplace health and safety

Qualification Mapping Information

Supersedes and is equivalent to AUR21116 Certificate II in Automotive Sales.

Links

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AUR21220 Certificate II in Automotive Underbody Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a limited range of tasks on the underbody systems of a variety of vehicles in the automotive retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 14

4 core units, plus

10 elective units, of which:

- all **4** units in one of the Specialist Elective Groups A to C must be chosen
- of the remaining **6** units required to make up the elective unit total:
  - all **6** may be from the general elective units listed below
  - up to **3** may be from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Specialisations:

Where relevant, specialisations can be used for this qualification in:

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- General Underbody Repair
- Exhaust Repair
- Radiator and Cooling System Repair

The achievement of a specialisation will be identified on testamurs as follows:

- AUR21220 Certificate II in Automotive Underbody Technology (General Underbody Repair)
- AUR21220 Certificate II in Automotive Underbody Technology (Exhaust Repair)
- AUR21220 Certificate II in Automotive Underbody Technology (Radiator and Cooling System Repair)

General Underbody Repair specialisation

Select all 4 units in Specialist Elective Group A.

Exhaust Repair specialisation

Select all 4 units in Specialist Elective Group B.

Radiator and Cooling System Repair specialisation

Select all 4 units in Specialist Elective Group C.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace
AURASA102 Follow safe working practices in an automotive workplace
AURATA001 Identify basic automotive faults using troubleshooting processes
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Specialist Elective Units

Group A: Underbody Repair

AURTTB101 Inspect and service braking systems
AURTTD002 Inspect and service steering systems
AURTTD004 Inspect and service suspension systems
AURTTZ102 Diagnose and repair exhaust systems

Group B: Exhaust Repair

AURTTA104 Carry out servicing operations
AURTTS101 Fabricate exhaust systems and components
AURTTZ102 Diagnose and repair exhaust systems
AURVTW109 Carry out basic gas metal arc welding

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Group C: Radiator and Cooling System Repair

AURTTC001 Inspect and service cooling systems
AURTTC002 Repair radiators
AURTTW001 Carry out soft soldering techniques
AURVTW006 Carry out thermoplastic welding on vehicle trim components

General Elective Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace
AURAFA001 Use numbers in an automotive workplace
AURAFA002 Read and respond to automotive workplace information
AURAFA103 Communicate effectively in an automotive workplace
AURAFA104 Resolve routine problems in an automotive workplace
AURAMA001 Work effectively with others in an automotive workplace
AURAQA001 Contribute to quality work outcomes in an automotive workplace
AURETR112 Test and repair basic electrical circuits
AURLTJ102 Remove, inspect, repair and refit light vehicle tyres and tubes
AURLTJ113 Remove, inspect and refit light vehicle wheel and tyre assemblies
AURTTA009 Carry out mechanical pre-repair operations
AURTTA104 Carry out servicing operations
AURTTB013 Machine brake drums and brake disc rotors
AURTTC103 Diagnose and repair cooling systems
AURTTE104 Inspect and service engines
AURTTQ001 Inspect and service final drive assemblies
AURTTQ103 Inspect and service drive shafts
AURTTS101 Fabricate exhaust systems and components
AURTTX102 Inspect and service manual transmissions
AURTTX103 Inspect and service automatic transmissions
AURTTZ001 Inspect and service exhaust systems
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW109 Carry out basic gas metal arc welding

Qualification Mapping Information

Supersedes and is equivalent to AUR21216 Certificate II in Automotive Underbody Technology.

Supersedes and is not equivalent to AUR21416 Certificate II in Automotive Cooling System Technology.

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Supersedes and is not equivalent to AUR21716 Certificate II in Automotive Exhaust System Technology.

Links

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AUR21520 Certificate II in Automotive Cylinder Head Reconditioning

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a range of tasks on engine cylinder heads in the automotive retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 14

7 core units, plus

7 elective units, of which:

- all **7** units may be from the elective units listed below
- up to **3** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

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AURATA001 Identify basic automotive faults using troubleshooting processes
AURTTA009 Carry out mechanical pre-repair operations
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTK102 Use and maintain tools and equipment in an automotive workplace
AURTTM011 Recondition engine cylinder heads

Elective Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace
AURAFA001 Use numbers in an automotive workplace
AURAFA002 Read and respond to automotive workplace information
AURAFA103 Communicate effectively in an automotive workplace
AURTTA104 Carry out servicing operations
AURTTC001 Inspect and service cooling systems
AURTTE004 Inspect and service engines
AURTTW003 Carry out machining operations
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW104 Carry out tungsten inert gas welding
AURVTW109 Carry out basic gas metal arc welding

Qualification Mapping Information

Supersedes and is equivalent to AUR21516 Certificate II in Automotive Cylinder Head Reconditioning.

Links

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AUR21820 Certificate II in Automotive Steering and Suspension System Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a limited range of tasks on steering and suspension systems in the automotive retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 11

7 core units, plus

4 elective units, of which:

- **1** unit must be from Specialist Elective Group A or Group B
- of the remaining **3** units required to make the up the elective unit total:
  - up to **3** may be from the general elective units listed below
  - up to **2** may be from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

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AURAEA002 Follow environmental and sustainability best practice in an automotive workplace
AURASA102 Follow safe working practices in an automotive workplace
AURATA001 Identify basic automotive faults using troubleshooting processes
AURTTD002 Inspect and service steering systems
AURTTD004 Inspect and service suspension systems
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Specialist Elective Units

Group A: Light vehicle wheel alignment
AURLTD106 Carry out light vehicle wheel alignment operations

Group B: Heavy vehicle wheel alignment
AURHTD104 Carry out heavy vehicle wheel alignment operations

General Elective Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace
AURAFA001 Use numbers in an automotive workplace
AURAFA002 Read and respond to automotive workplace information
AURAFA103 Communicate effectively in an automotive workplace
AURLTD104 Diagnose and repair light vehicle steering systems
AURLTD105 Diagnose and repair light vehicle suspension systems
AURLTD109 Diagnose complex faults in light vehicle steering and suspension systems
AURLTJ011 Select light vehicle tyres and wheels for specific applications
AURLTJ102 Remove, inspect, repair and refit light vehicle tyres and tubes
AURLTJ113 Remove, inspect and refit light vehicle wheel and tyre assemblies
AURTTA104 Carry out servicing operations
AURTTD001 Inspect steering systems
AURTTD003 Inspect suspension systems
AURTTJ011 Balance wheels and tyres

Qualification Mapping Information

Supersedes and is equivalent to AUR21816 Certificate II in Automotive Steering and Suspension System Technology.

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Links

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AUR21920 Certificate II in Automotive Tyre Servicing Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a range of tasks on tyres in the automotive retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 14

4 core units, plus

10 elective units, of which:

- all units in one of the Specialist Elective Groups A to D below must be chosen
- of the remaining units required to make up the elective unit total:
  - all **7** may be from the Specialist Elective Groups and general elective units listed below
  - up to **3** may be from a Certificate I qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

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AURAEA002 Follow environmental and sustainability best practice in an automotive workplace
AURASA102 Follow safe working practices in an automotive workplace
AURATA001 Identify basic automotive faults using troubleshooting processes
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Specialist Elective Units

Group A: Light Vehicle Tyres

AURLTJ011 Select light vehicle tyres and wheels for specific applications
AURLTJ102 Remove, inspect, repair and refit light vehicle tyres and tubes
AURLTJ113 Remove, inspect and refit light vehicle wheel and tyre assemblies

Group B: Heavy Vehicle Tyres

AURHTJ102 Select heavy vehicle tyres, wheels and rims for specific applications
AURHTJ103 Remove, inspect and refit heavy vehicle wheel and tyre assemblies
AURHTJ106 Remove, inspect, repair and refit heavy vehicle tyres and tubes

Group C: Agricultural Tyres

AURHTJ102 Select heavy vehicle tyres, wheels and rims for specific applications
AURHTJ103 Remove, inspect and refit heavy vehicle wheel and tyre assemblies
AURHTJ104 Remove, inspect, repair and refit agricultural equipment tyres and tubes

Group D: Earthmoving and Off-the-Road Tyres

AURKTJ011 Remove, inspect and fit earthmoving and off-the-road tyres
AURKTJ012 Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies
AURKTJ015 Select earthmoving and off-the-road tyres, wheels and rim assemblies for specific applications
AURKTJ016 Use earthmoving and off-the-road tyre handlers

General Elective Units

AURAFA001 Use numbers in an automotive workplace
AURAFA002 Read and respond to automotive workplace information
AURAFA103 Communicate effectively in an automotive workplace
AURETR115 Inspect, test and service batteries
AURHTJ007 Remove, inspect, repair and refit industrial tyres and tubes
AURJTJ001 Remove, inspect and refit motorcycle wheel and tyre assemblies
AURJTJ002 Remove, inspect, repair and refit motorcycle tyres and tubes
AURKTJ013 Perform minor repairs to earthmoving and off-the-road tyres

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AURTTA104 Carry out servicing operations
AURTTB101 Inspect and service braking systems
AURTTC001 Inspect and service cooling systems
AURTTD002 Inspect and service steering systems
AURTTD004 Inspect and service suspension systems
AURTTE104 Inspect and service engines
AURTTF101 Inspect and service petrol fuel systems
AURTTJ011 Balance wheels and tyres
AURTTJ012 Remove, inspect and refit wheel hubs and associated brake components
RIICOM201D Communicate in the workplace
RIIQUA201D Maintain and monitor site quality standard
RIIRIS201D Conduct local risk control
RIIWHS201D Work safely and follow WHS policies and procedures
RIIWHS204D Work safely at heights
TLID3011 Conduct specialised forklift operations
TLILIC0003 Licence to operate a forklift truck

Qualification Mapping Information

Supersedes and is equivalent to AUR21916 Certificate II in Automotive Tyre Servicing Technology.

Links

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AUR30116 Certificate III in Automotive Administration

Modification History

Release	Comment
Release 1	New qualification.

Qualification Description

This qualification reflects the role of individuals who perform a broad range of administrative tasks in the automotive retail, service and repair industry.

Entry Requirements

This qualification may be accessed by direct entry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Packaging Rules

Total number of units = 18

10 core units, plus

8 elective units, of which:

- up to **8** units may be chosen from the Elective Units listed below
- up to **3** units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

Core Units

Unit code	Unit title
AURAAA001	Work in an automotive administration role

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Unit code	Unit title
AURACA001	Respond to customer needs and enquiries in an automotive workplace
AURACA003	Build customer relations in an automotive workplace
AURAEA002	Follow environmental and sustainability best practice in an automotive workplace
AURAFA003	Communicate effectively in an automotive workplace
AURAKA001	Use information technology systems
AURAKA002	Adapt work processes to new technologies in an automotive workplace
AURAMA004	Maintain business image in an automotive workplace
AURAQA003	Maintain quality processes in an automotive workplace
AURASA002	Follow safe working practices in an automotive workplace

Elective Units

Unit code	Unit title
AURACA002	Manage complex customer requirements in an automotive workplace
AURAFA002	Read and respond to automotive workplace information
AURAFA004	Resolve routine problems in an automotive workplace
AURAFA005	Write routine texts in an automotive workplace
AURAMA001	Work effectively with others in an automotive workplace
AURSAA001	Process customer complaints in an automotive workplace
AURSAA002	Maintain customer aftermarket relations
AURSCA005	Sell automotive products and services
AURSCA006	Promote automotive products and services
AURSCA011	Conduct online transactions in an automotive workplace

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Unit code	Unit title
AURSLA001	Comply with legal requirements when selling automotive products and services
BSBFIA303	Process accounts payable and receivable
BSBINM202	Handle mail
TAEDEL301	Provide work skill instruction

Qualification Mapping Information

Equivalent to AUR30112 Certificate III in Automotive Administration

Links

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AUR30220 Certificate III in Bicycle Workshop Operations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a broad range of mechanical tasks on a variety of bicycles in the bicycle retail, service and repair sector.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 28

16 core units, plus

12 elective units, of which:

- all **12** units may be from the elective units listed below
- up to **5** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

AURBCA101 Work in a retail bicycle environment

AURBTA104 Assemble new boxed bicycles for retail sale

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AURBTB002 Service bicycle hydraulic braking systems
AURBTB003 Repair and overhaul bicycle hydraulic braking systems
AURBTB101 Service and repair bicycle mechanical braking systems
AURBTD101 Service bicycle steering systems
AURBTD102 Service bicycle suspension systems
AURBTD103 Repair and overhaul bicycle steering systems
AURBTJ102 Service bicycle wheels and hubs
AURBTJ103 Design and build bicycle wheels
AURBTJ104 Repair and overhaul bicycle wheels and hubs
AURBTQ001 Service bicycle drivetrain systems
AURBTQ002 Repair and overhaul bicycle drivetrain systems
AURBTV101 Remove, refit and adjust bicycle accessories

Elective Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace
AURAFA001 Use numbers in an automotive workplace
AURAFA002 Read and respond to automotive workplace information
AURAFA103 Communicate effectively in an automotive workplace
AURAFA104 Resolve routine problems in an automotive workplace
AURAFA105 Write routine texts in an automotive workplace
AURAKA002 Adapt work processes to new technologies in an automotive workplace
AURAMA001 Work effectively with others in an automotive workplace
AURAMA102 Communicate business information in an automotive workplace
AURAQA001 Contribute to quality work outcomes in an automotive workplace
AURAQA002 Inspect technical quality of work in an automotive workplace
AURAQA003 Maintain quality processes in an automotive workplace
AURBCA102 Select and adjust bicycles to fit riders
AURBTA005 Restore bicycles
AURBTA007 Provide mechanical support during cycling events
AURBTA103 Assemble bicycles
AURBTA106 Assemble components for custom bicycles
AURBTA108 Disassemble and pack a bicycle for transport
AURBTD104 Repair and overhaul bicycle suspension systems
AURBTJ101 Remove, repair and refit bicycle tyres
AURBTK101 Maintain specialised bicycle repair tools and equipment
AURBTR002 Install and adjust bicycle electronic gear shifters
AURBTR101 Inspect and service electric power-assisted bicycles
AURBTR103 Retrofit electric drivetrain systems to bicycles
AURBTR104 Diagnose and repair electric bicycles

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AURBTY001 Repair bicycle frames
AURBTY002 Design and build bicycle frames
AURBTY003 Repair carbon fibre bicycle frames
AURSAA001 Process customer complaints in an automotive workplace
AURSCA102 Present automotive products and services for sale
AURSCA103 Apply sales procedures in an automotive workplace
AURSCA105 Sell automotive products and services
AURSCA106 Promote automotive products and services
AURTTA118 Develop and carry out diagnostic test strategies
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTK102 Use and maintain tools and equipment in an automotive workplace
AURTTW001 Carry out soft soldering techniques
AURVTW002 Carry out oxyacetylene brazing of components
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
AURVTW104 Carry out tungsten inert gas welding
AURVTW109 Carry out basic gas metal arc welding
BSBPEF202 Plan and apply time management
BSBPEF301 Organise personal work priorities
MEM11011 Undertake manual handling*
MEM13015 Work safely and effectively in manufacturing and engineering
MEM16006 Organise and communicate information*
MEM18002 Use power tools/hand held operations*
SIRRINV001 Receive and handle retail stock
SIRRINV002 Control stock
TAEDEL301 Provide work skill instruction
TLIA3039 Receive and store stock

*Note the following prerequisite unit requirements.

UNIT IN THIS QUALIFICATION	**PREREQUISITE UNIT(S)**
MEM11011 Undertake manual handling	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM16006 Organise and communicate information	MEM13015 Work safely and effectively in manufacturing and engineering
MEM18002 Use power tools/hand held	MEM11011 Undertake manual handling

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UNIT IN THIS QUALIFICATION	PREREQUISITE UNIT(S)
operations	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information

Qualification Mapping Information

Supersedes and is equivalent to AUR30216 Certificate III in Bicycle Workshop Operations.

Links

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AUR30320 Certificate III in Automotive Electrical Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who service, diagnose and repair electrical systems and components in vehicles in the automotive electrical service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 32

21 core units, plus

11 elective units, of which:

- all **11** units may be from the elective units listed below
- up to **6** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

AURETK002 Use and maintain electrical test equipment in an automotive workplace

AURETR006 Solder electrical wiring and circuits

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AURETR007 Apply knowledge of automotive electrical circuits and wiring systems
AURETR009 Install vehicle lighting and wiring systems
AURETR010 Repair wiring harnesses and looms
AURETR027 Install ancillary electronic systems and components
AURETR112 Test and repair basic electrical circuits
AURETR123 Diagnose and repair spark ignition engine management systems
AURETR124 Diagnose and repair compression ignition engine management systems
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURETR128 Diagnose and repair instruments and warning systems
AURETR129 Diagnose and repair charging systems
AURETR130 Diagnose and repair starting systems
AURETR131 Diagnose and repair ignition systems
AURETR132 Diagnose and repair automotive electrical systems
AURETR135 Apply knowledge of petrol and diesel engine operation
AURETR143 Diagnose and repair electronic body management systems
AURTTA118 Develop and carry out diagnostic test strategies
AURTTE104 Inspect and service engines

Elective Units

AURAFA103 Communicate effectively in an automotive workplace
AURATA004 Provide technical guidance
AURATA005 Estimate and quote automotive mechanical and electrical repairs
AURETB101 Diagnose and repair electric braking systems
AURETD111 Diagnose and repair electronically controlled steering systems
AURETH002 Service and maintain battery electric vehicles*
AURETH011 Depower and reinitialise hybrid electric vehicles
AURETH101 Depower and reinitialise battery electric vehicles
AURETR005 Install automotive security systems and components
AURETR008 Remove and replace electrical units and assemblies
AURETR011 Install basic ancillary electrical systems and components
AURETR013 Inspect, test and service charging systems
AURETR014 Inspect, test and service starting systems
AURETR017 Overhaul charging system alternators
AURETR018 Overhaul starting system motors
AURETR019 Inspect, service and repair AC electric motor drive systems
AURETR021 Inspect, service and repair electronic management, monitoring and tracking systems
AURETR026 Remove, replace and program electrical and electronic units and assemblies
AURETR042 Remove, refit and operate electrical components following body repair activities

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AURETR045 Inspect, service and repair DC electric motor drive systems
AURETR115 Inspect, test and service batteries
AURETR116 Read and apply vehicle wiring schematics and drawings
AURETR120 Diagnose and repair network electronic control systems
AURETR122 Diagnose and repair vehicle dynamic control systems
AURETR144 Diagnose and repair integrated engine and transmission management systems
AURETR149 Apply knowledge of ADAS systems to vehicle pre-repair scans
AURETR236 Diagnose and repair electronically controlled suspension systems
AURETU001 Install air conditioning systems
AURETU007 Overhaul air conditioning and HVAC system compressors
AURETU102 Recover vehicle refrigerants
AURETU103 Service air conditioning and HVAC systems
AURETU104 Diagnose and repair air conditioning and HVAC components
AURETU105 Retrofit automotive air conditioning and HVAC systems
AURHTZ101 Diagnose and repair heavy vehicle emission control systems
AURLTB103 Diagnose and repair light vehicle hydraulic braking systems
AURLTD104 Diagnose and repair light vehicle steering systems
AURLTD105 Diagnose and repair light vehicle suspension systems
AURLTE001 Remove and install light vehicle engine assemblies
AURLTE102 Diagnose and repair light vehicle engines
AURLTF101 Diagnose and repair light vehicle mechanical fuel injection systems
AURPTR002 Test and service electric outdoor power equipment
AURRTR007 Install marine electrical systems and components
AURTTA017 Carry out vehicle safety inspections
AURTTA104 Carry out servicing operations
AURTTA105 Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA121 Diagnose complex system faults
AURTTB101 Inspect and service braking systems
AURTTC103 Diagnose and repair cooling systems
AURTTF101 Inspect and service petrol fuel systems
AURTTK102 Use and maintain tools and equipment in an automotive workplace
AURTTL010 Install LPG, CNG and LNG electrical control equipment
AURTTW001 Carry out soft soldering techniques
AURTTZ102 Diagnose and repair exhaust systems
AURVTA002 Remove and replace vehicle supplementary restraint systems
AURVTA104 Inspect damaged vehicle systems and recommend repairs
AURVTT003 Remove and replace automotive and marine interior trim components
AURVTW002 Carry out oxyacetylene brazing of components
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components

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AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
AURVTW104 Carry out tungsten inert gas welding
BSBSTR401 Promote innovation in team environments
BSBWHS311 Assist with maintaining workplace safety
TAEDEL301 Provide work skill instruction

*Note the following prerequisite unit requirements.

UNIT IN THIS QUALIFICATION	PREREQUISITE UNIT
AURETH002 Service and maintain battery electric vehicles	AURETH001 Depower and reinitialise battery electric vehicles

Qualification Mapping Information

Supersedes and is not equivalent to AUR30316 Certificate III in Automotive Electrical Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR30420 Certificate III in Agricultural Mechanical Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a broad range of tasks on a variety of agricultural machinery in the automotive retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 36

21 core units, plus

15 elective units, of which:

- all **15** units may be from the elective units listed below
- up to **6** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

AURETR112 Test and repair basic electrical circuits

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AURETR125 Test, charge and replace batteries and jump-start vehicles
AURETR129 Diagnose and repair charging systems
AURETR130 Diagnose and repair starting systems
AURHTE102 Diagnose and repair heavy vehicle compression ignition engines
AURHTF102 Diagnose and repair heavy vehicle diesel fuel injection systems
AURKTA111 Diagnose and repair mobile plant hydraulic systems
AURKTB101 Diagnose and repair mobile plant braking systems
AURKTD102 Diagnose and repair mobile plant steering systems
AURKTQ101 Diagnose and repair mobile plant final drive assemblies
AURKTX101 Diagnose and repair powershift transmissions
AURTTA104 Carry out servicing operations
AURTTA118 Develop and carry out diagnostic test strategies
AURTTB101 Inspect and service braking systems
AURTTC103 Diagnose and repair cooling systems
AURTTE104 Inspect and service engines
AURTTF102 Inspect and service diesel fuel injection systems
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Elective Units

AURAFA103 Communicate effectively in an automotive workplace
AURETR021 Inspect, service and repair electronic management, monitoring and tracking systems
AURETR120 Diagnose and repair network electronic control systems
AURETR124 Diagnose and repair compression ignition engine management systems
AURETR132 Diagnose and repair automotive electrical systems
AURETU103 Service air conditioning and HVAC systems
AURETU104 Diagnose and repair air conditioning and HVAC components
AURETU105 Retrofit automotive air conditioning and HVAC systems
AURHTD103 Diagnose and repair heavy commercial vehicle suspension systems
AURHTE001 Remove and install heavy vehicle engine assemblies
AURHTJ103 Remove, inspect and refit heavy vehicle wheel and tyre assemblies
AURHTJ104 Remove, inspect, repair and refit agricultural equipment tyres and tubes
AURHTJ106 Remove, inspect, repair and refit heavy vehicle tyres and tubes
AURHTL101 Inspect, diagnose and repair alternative fuel systems in heavy vehicle engines
AURHTQ102 Diagnose and repair heavy commercial vehicle final drive assemblies
AURHTQ103 Diagnose and repair heavy vehicle drive shafts
AURHTX101 Diagnose and repair heavy vehicle manual transmissions
AURHTX104 Diagnose and repair heavy vehicle clutch systems
AURHTZ101 Diagnose and repair heavy vehicle emission control systems
AURKTA001 Synchronise plant and equipment

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AURKTA002 Inspect, service and repair crop harvesting equipment
AURKTA003 Inspect, service and repair crop planting and seeding equipment
AURKTA004 Inspect, service and repair spraying and spreading equipment
AURKTA005 Inspect, service and repair track type drive and support systems
AURKTA010 Inspect, service and repair hay cutting, raking and baling equipment
AURKTD101 Diagnose and repair mobile plant suspension systems
AURKTX104 Diagnose and repair continuously variable transmissions
AURTTA006 Inspect and service hydraulic systems
AURTTA007 Inspect, service and repair pneumatic systems
AURTTA011 Install hydraulic systems to specified applications
AURTTA012 Fabricate and install fluid power hose assemblies
AURTTA014 Assemble and install pneumatic system components
AURTTA105 Select and use bearings, seals, gaskets, sealants and adhesives
AURTTB004 Inspect and service air braking systems
AURTTD002 Inspect and service steering systems
AURTTD004 Inspect and service suspension systems
AURTTF105 Diagnose and repair engine forced-induction systems
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTL003 Install CNG fuel systems
AURTTL006 Install LNG fuel systems
AURTTL009 Install LPG fuel systems
AURTTL104 Inspect and service LNG fuel systems
AURTTL105 Diagnose and repair LNG fuel systems
AURTTQ001 Inspect and service final drive assemblies
AURTTQ103 Inspect and service drive shafts
AURTTX102 Inspect and service manual transmissions
AURTTX104 Inspect and service hydrostatic transmissions
AURTTX106 Diagnose and repair hydrostatic transmissions
AURTTZ102 Diagnose and repair exhaust systems
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
AURVTW104 Carry out tungsten inert gas welding
AURVTW109 Carry out basic gas metal arc welding

Qualification Mapping Information

Supersedes and is equivalent to AUR30416 Certificate III in Agricultural Mechanical Technology.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR30520 Certificate III in Marine Mechanical Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a range of tasks in the marine industry. It is suitable for entry into the marine mechanical service and repair sector.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 30

11 core units

19 elective units, of which:

- **1** unit must be from one of the Specialist Elective Groups A or B below
- of the remaining units required to make the up the elective unit total:
  - all **18** may be from the general elective units listed below
  - up to **5** may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

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AURETR112 Test and repair basic electrical circuits
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURETR129 Diagnose and repair charging systems
AURETR130 Diagnose and repair starting systems
AURRTE008 Install marine engines, controls and instruments
AURRTR007 Install marine electrical systems and components
AURRTR106 Diagnose and repair marine electrical systems
AURTTE001 Apply knowledge of engine science
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Specialist Elective Units

Group A: Marine outboard engines
AURRTE002 Inspect and service marine outboard engines

Group B: Marine inboard engines
AURRTE003 Inspect and service marine inboard engines

General Elective Units

AURAFA001 Use numbers in an automotive workplace
AURETB101 Diagnose and repair electric braking systems
AURETK002 Use and maintain electrical test equipment in an automotive workplace
AURETR006 Solder electrical wiring and circuits
AURETR009 Install vehicle lighting and wiring systems
AURETR011 Install basic ancillary electrical systems and components
AURETR026 Remove, replace and program electrical and electronic units and assemblies
AURETR115 Inspect, test and service batteries
AURETR021 Inspect, service and repair electronic management, monitoring and tracking systems
AURETR123 Diagnose and repair spark ignition engine management systems
AURETR124 Diagnose and repair compression ignition engine management systems
AURETR128 Diagnose and repair instruments and warning systems
AURETR131 Diagnose and repair ignition systems
AURETR132 Diagnose and repair automotive electrical systems
AURHTF102 Diagnose and repair heavy vehicle diesel fuel injection systems
AURHTL101 Inspect, diagnose and repair alternative fuel systems in heavy vehicle engines
AURHTZ101 Diagnose and repair heavy vehicle emission control systems
AURLTB103 Diagnose and repair light vehicle hydraulic braking systems
AURRGA002 Use cranes, gantries and forklifts to launch and recover vessels
AURRTA001 Inspect and service deck, hull and cabin equipment

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AURRTA003 Winterise vessels and engine systems
AURRTC101 Diagnose and repair marine exhaust and cooling systems
AURRTD101 Diagnose and repair marine steering systems
AURRTE011 Overhaul two and four-stroke cycle marine outboard engines
AURRTE106 Diagnose and repair marine outboard engines
AURRTE107 Diagnose and repair marine inboard engines
AURRTF001 Diagnose and repair petrol and diesel marine fuel systems
AURRTQ001 Inspect and service marine inboard propeller drive systems
AURRTQ002 Inspect and service marine jet drive propulsion systems
AURRTQ005 Install marine jet drive propulsion systems
AURRTQ104 Diagnose and repair marine inboard propeller drive systems
AURRTQ106 Diagnose and repair marine jet drive propulsion systems
AURRTR108 Diagnose and repair marine network electronic control systems
AURRTX001 Inspect and service marine outboard and stern drive transmissions
AURRTX002 Inspect and service marine inboard transmissions
AURRTX103 Diagnose and repair marine outboard and stern drive transmissions
AURRTX104 Diagnose and repair marine inboard transmissions
AURTGA001 Drive and manoeuvre trailers
AURTTA010 Service and repair trailers up to 4.5 tonnes
AURTTA113 Diagnose and repair hydraulic systems
AURTTA118 Develop and carry out diagnostic test strategies
AURTTA121 Diagnose complex system faults
AURTTB101 Inspect and service braking systems
AURTTF102 Inspect and service diesel fuel injection systems
AURTTF105 Diagnose and repair engine forced-induction systems
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
BSBPEF202 Plan and apply time management
BSBPEF301 Organise personal work priorities
MEM09002 Interpret technical drawing*
MEM12023 Perform engineering measurements*
MEM12024 Perform computations*
MEM13015 Work safely and effectively in manufacturing and engineering
MEM16006 Organise and communicate information*
TLID1001 Shift materials safely using manual handling methods
TLILIC0003 Licence to operate a forklift truck

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*Note the following prerequisite unit requirements.

UNIT IN THIS QUALIFICATION	PREREQUISITE UNIT(S)
MEM09002 Interpret technical drawing	MEM12023 Perform engineering measurements MEM12024 Perform computations MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM12023 Perform engineering measurements	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM12024 Perform computations	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM16006 Organise and communicate information	MEM13015 Work safely and effectively in manufacturing and engineering

Qualification Mapping Information

No equivalent qualification. Supersedes and is not equivalent to AUR30516 Certificate III in Marine Mechanical Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR30620 Certificate III in Light Vehicle Mechanical Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a broad range of tasks on a variety of light vehicles in the automotive retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 36

20 core units, plus

16 elective units, of which:

- all **16** units may be from the elective units listed below
- up to **6** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

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AURETR112 Test and repair basic electrical circuits
AURETR123 Diagnose and repair spark ignition engine management systems
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURETR129 Diagnose and repair charging systems
AURETR130 Diagnose and repair starting systems
AURETR131 Diagnose and repair ignition systems
AURLTD104 Diagnose and repair light vehicle steering systems
AURLTB103 Diagnose and repair light vehicle hydraulic braking systems
AURLTD105 Diagnose and repair light vehicle suspension systems
AURLTE102 Diagnose and repair light vehicle engines
AURLTZ101 Diagnose and repair light vehicle emission control systems
AURTTA104 Carry out servicing operations
AURTTA118 Develop and carry out diagnostic test strategies
AURTTB101 Inspect and service braking systems
AURTTC103 Diagnose and repair cooling systems
AURTTE104 Inspect and service engines
AURTTF101 Inspect and service petrol fuel systems
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Elective Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace
AURAFA103 Communicate effectively in an automotive workplace
AURETD011 Diagnose and repair electronically controlled steering systems
AURETH002 Service and maintain battery electric vehicles*
AURETH011 Depower and reinitialise hybrid electric vehicles
AURETH012 Service and maintain electrical components in hybrid electric vehicles
AURETH101 Depower and reinitialise battery electric vehicles
AURETR010 Repair wiring harnesses and looms
AURETR011 Install basic ancillary electrical systems and components
AURETR028 Diagnose and repair instruments and warning systems
AURETR032 Diagnose and repair automotive electrical systems
AURETR120 Diagnose and repair network electronic control systems
AURETR122 Diagnose and repair vehicle dynamic control systems
AURETR124 Diagnose and repair compression ignition engine management systems
AURETR143 Diagnose and repair electronic body management systems
AURETR144 Diagnose and repair integrated engine and transmission management systems
AURETR149 Apply knowledge of ADAS technology to vehicle pre-repair scans
AURETR236 Diagnose and repair electronically controlled suspension systems
AURETU103 Service air conditioning and HVAC systems
AURETU104 Diagnose and repair air conditioning and HVAC components

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AURETU105 Retrofit automotive and modify air conditioning and HVAC systems
AURLTD001 Select and install performance enhanced suspension system products
AURLTD002 Service and repair light vehicle lift assisted suspension systems
AURLTD106 Carry out light vehicle wheel alignment operations
AURLTE001 Remove and install light vehicle engine assemblies
AURLTF101 Diagnose and repair light vehicle mechanical fuel injection systems
AURLTF102 Diagnose and repair light vehicle diesel fuel injection systems
AURLTJ011 Select light vehicle tyres and wheels for specific applications
AURLTJ102 Remove, inspect, repair and refit light vehicle tyres and tubes
AURLTJ113 Remove, inspect and refit light vehicle wheel and tyre assemblies
AURLTQ101 Diagnose and repair light vehicle final drive assemblies
AURLTQ102 Diagnose and repair light vehicle drive shafts
AURLTX101 Diagnose and repair light vehicle manual transmissions
AURLTX102 Diagnose and repair light vehicle automatic transmissions
AURLTX103 Diagnose and repair light vehicle clutch systems
AURTTA009 Carry out mechanical pre-repair operations
AURTTA017 Carry out vehicle safety inspections
AURTTA105 Select and use bearings, seals, gaskets, sealants and adhesives
AURTTB013 Machine brake drums and brake disc rotors
AURTTB015 Assemble and fit braking system components
AURTTC001 Inspect and service cooling systems
AURTTD002 Inspect and service steering systems
AURTTD004 Inspect and service suspension systems
AURTTF102 Inspect and service diesel fuel injection systems
AURTTF105 Diagnose and repair engine forced-induction systems
AURTTF106 Diagnose and repair petrol carburettor systems
AURTTJ011 Balance wheels and tyres
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTL003 Install CNG fuel systems
AURTTL006 Install LNG fuel systems
AURTTL007 Inspect and service LPG fuel systems
AURTTL009 Install LPG fuel systems
AURTTL104 Inspect and service LNG fuel systems
AURTTL105 Diagnose and repair LNG fuel systems
AURTTL108 Diagnose and repair LPG fuel systems
AURTTQ001 Inspect and service final drive assemblies
AURTTQ003 Inspect and service drive shafts
AURTTW001 Carry out soft soldering techniques
AURTTX102 Inspect and service manual transmissions
AURTTX103 Inspect and service automatic transmissions

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AURTTZ002 Diagnose and repair exhaust systems
AURVTA104 Inspect damaged vehicle systems and recommend repairs
AURVTW002 Carry out oxyacetylene brazing of components
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
AURVTW104 Carry out tungsten inert gas welding
AURVTW109 Carry out basic gas metal arc welding

*Note the following prerequisite unit requirements.

UNIT IN THIS QUALIFICATION	PREREQUISITE UNIT
AURETH002 Service and maintain battery electric vehicles	AURETH001 Depower and reinitialise battery electric vehicles

Qualification Mapping Information

Supersedes and is equivalent to AUR30616 Certificate III in Light Vehicle Mechanical Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR30720 Certificate III in Outdoor Power Equipment Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a broad range of tasks in the outdoor power equipment retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 38

17 core units, plus

21 elective units, of which:

- all **21** units may be from the elective units listed below
- up to **6** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

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AURPTA103 Service and repair rotary cutting systems
AURPTA105 Service and repair chainsaw cutting systems
AURPTA106 Inspect and service line trimming systems and components
AURPTA107 Service and repair post boring systems
AURPTA108 Service and repair post hole digging systems
AURPTA109 Service and repair reciprocating cutting systems
AURPTA110 Inspect and service pumping systems
AURPTA111 Diagnose and repair pumping systems
AURPTE102 Inspect and service outdoor power equipment engines
AURPTE103 Diagnose and repair outdoor power equipment engines
AURPTE104 Overhaul outdoor power equipment engines
AURPTR104 Inspect and service cordless electric tool skins
AURPTR105 Diagnose and repair cordless electric tool skins
AURTTA118 Develop and carry out diagnostic test strategies
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Elective Units

AURACA102 Manage complex customer requirements in an automotive workplace
AURACA103 Build customer relations in an automotive workplace
AURAFA103 Communicate effectively in an automotive workplace
AURAMA001 Work effectively with others in an automotive workplace
AURAMA102 Communicate business information in an automotive workplace
AURATA001 Identify basic automotive faults using troubleshooting processes
AURETK002 Use and maintain electrical test equipment in an automotive workplace
AURETR006 Solder electrical wiring and circuits
AURETR009 Install vehicle lighting and wiring systems
AURETR026 Remove, replace and program electrical and electronic units and assemblies
AURETR112 Test and repair basic electrical circuits
AURETR115 Inspect, test and service batteries
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURETR129 Diagnose and repair charging systems
AURETR130 Diagnose and repair starting systems
AURETR131 Diagnose and repair ignition systems
AURETR132 Diagnose and repair automotive electrical systems
AURHTX104 Diagnose and repair heavy vehicle clutch systems
AURKTA005 Inspect, service and repair track type drive and support systems
AURLTD104 Diagnose and repair light vehicle steering systems
AURLTE102 Diagnose and repair light vehicle engines
AURLTF102 Diagnose and repair light vehicle diesel fuel injection systems

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AURLTJ102 Remove, inspect, repair and refit light vehicle tyres and tubes
AURLTX101 Diagnose and repair light vehicle manual transmissions
AURLTZ101 Diagnose and repair light vehicle emission control systems
AURPTA104 Service and repair drum cutting systems
AURPTR101 Test and service 240 volt portable generators
AURPTR102 Test and service electric outdoor power equipment
AURPTR103 Service and repair outdoor power equipment engine management systems
AURPTR106 Deploy and service autonomous outdoor power equipment
AURTTA006 Inspect and service hydraulic systems
AURTTA113 Diagnose and repair hydraulic systems
AURTTA121 Diagnose complex system faults
AURTTB101 Inspect and service braking systems
AURTTC001 Inspect and service cooling systems
AURTTC103 Diagnose and repair cooling systems
AURTTD002 Inspect and service steering systems
AURTTD003 Inspect suspension systems
AURTTD004 Inspect and service suspension systems
AURTTE104 Inspect and service engines
AURTTF101 Inspect and service petrol fuel systems
AURTTF105 Diagnose and repair engine forced-induction systems
AURTTF106 Diagnose and repair petrol carburettor systems
AURTTJ012 Remove, inspect and refit wheel hubs and associated brake components
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTQ001 Inspect and service final drive assemblies
AURTTX102 Inspect and service manual transmissions
AURTTX104 Inspect and service hydrostatic transmissions
AURTTX106 Diagnose and repair hydrostatic transmissions
AURTTZ102 Diagnose and repair exhaust systems
AURVTW002 Carry out oxyacetylene brazing of components
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
AURVTW104 Carry out tungsten inert gas welding
AURVTW109 Carry out basic gas metal arc welding
MEM11011 Undertake manual handling*
MEM13015 Work safely and effectively in manufacturing and engineering
MEM16006 Organise and communicate information*
MEM18002 Use power tools/hand held operations*
TLID1001 Shift materials safely using manual handling methods
TLID2004 Load and unload goods/cargo

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TLID2013 Move materials mechanically using automated equipment

*Note the following prerequisite unit requirements.

UNIT IN THIS QUALIFICATION	PREREQUISITE UNIT(S)
MEM11011 Undertake manual handling	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM16006 Organise and communicate information	MEM13015 Work safely and effectively in manufacturing and engineering
MEM18002 Use power tools/hand held operations	MEM11011 Undertake manual handling MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information

Qualification Mapping Information

Supersedes and is not equivalent to AUR30716 Certificate III in Outdoor Power Equipment Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR30820 Certificate III in Motorcycle Mechanical Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a broad range of tasks on a variety of motorcycles in the automotive service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 36

23 core units, plus

13 elective units, of which:

- all **13** units may be from the elective units listed below
- up to **6** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

AURETR112 Test and repair basic electrical circuits

AURETR125 Test, charge and replace batteries and jump-start vehicles

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AURETR131 Diagnose and repair ignition systems
AURJTB101 Diagnose and repair motorcycle braking systems
AURJTD103 Diagnose and repair motorcycle suspension systems
AURJTD104 Diagnose and repair motorcycle steering systems
AURJTE101 Diagnose and repair motorcycle engines
AURJTE103 Inspect and service motorcycle engines
AURJTE104 Diagnose and repair motorcycle engine management systems
AURJTQ102 Diagnose and repair motorcycle driveline systems
AURJTR102 Diagnose and repair motorcycle charging systems
AURJTR103 Diagnose and repair motorcycle starting systems
AURJTR104 Diagnose and repair motorcycle dynamic control systems
AURJTX101 Diagnose and repair motorcycle clutch systems
AURJTX102 Diagnose and repair motorcycle manual transmissions
AURTTA118 Develop and carry out diagnostic test strategies
AURTTB101 Inspect and service braking systems
AURTTC103 Diagnose and repair cooling systems
AURTTF101 Inspect and service petrol fuel systems
AURTTF106 Diagnose and repair petrol carburettor systems
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Elective Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace
AURAFA103 Communicate effectively in an automotive workplace
AURETR116 Read and apply vehicle wiring schematics and drawings
AURETR122 Diagnose and repair vehicle dynamic control systems
AURETR123 Diagnose and repair spark ignition engine management systems
AURETR129 Diagnose and repair charging systems
AURETR130 Diagnose and repair starting systems
AURETR132 Diagnose and repair automotive electrical systems
AURJTJ001 Remove, inspect and refit motorcycle wheel and tyre assemblies
AURJTJ002 Remove, inspect, repair and refit motorcycle tyres and tubes
AURJTQ001 Inspect and service motorcycle driveline systems
AURJTX103 Diagnose and repair motorcycle automatic transmissions
AURLTD104 Diagnose and repair light vehicle steering systems
AURLTD105 Diagnose and repair light vehicle suspension systems
AURLTJ102 Remove, inspect, repair and refit light vehicle tyres and tubes
AURLTQ101 Diagnose and repair light vehicle final drive assemblies
AURLTQ102 Diagnose and repair light vehicle drive shafts
AURLTZ101 Diagnose and repair light vehicle emission control systems

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AURSCA106 Promote automotive products and services
AURTTA009 Carry out mechanical pre-repair operations
AURTTA104 Carry out servicing operations
AURTTA105 Select and use bearings, seals, gaskets, sealants and adhesives
AURTTC001 Inspect and service cooling systems
AURTTE104 Inspect and service engines
AURTTQ001 Inspect and service final drive assemblies
AURTTQ103 Inspect and service drive shafts
AURTTZ102 Diagnose and repair exhaust systems
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components
AURVTW109 Carry out basic gas metal arc welding

Qualification Mapping Information

Supersedes and is not equivalent to AUR30816 Certificate III in Motorcycle Mechanical Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR30920 Certificate III in Motor Sport Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a broad range of tasks on competition vehicles in the motor sport industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 36

21 core units, plus

15 elective units, of which:

- all **15** units may be from the elective units listed below
- up to **6** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURETR123 Diagnose and repair spark ignition engine management systems

AURLTB103 Diagnose and repair light vehicle hydraulic braking systems

AURLTD105 Diagnose and repair light vehicle suspension systems

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AURLTD106 Carry out light vehicle wheel alignment operations
AURLTE102 Diagnose and repair light vehicle engines
AURLTQ102 Diagnose and repair light vehicle drive shafts
AURLTX101 Diagnose and repair light vehicle manual transmissions
AURMBA002 Load and unload competition vehicles and support equipment
AURMDA002 Assist with officiating duties at motor sport events
AURMMA007 Follow motor sport event and team safety requirements
AURMMA101 Operate in a motor sport environment
AURMMA108 Coordinate operations of a motor sport team
AURMTA005 Perform pit lane and service area operations at motor sport events
AURMTA006 Perform torquing and fastening on motor sport competition vehicles
AURMTA007 Conduct non-destructive testing
AURMTA102 Assemble and prepare competition vehicles for motor sport events
AURMTA104 Prepare competition vehicles at motor sport events
AURMTA109 Collect and log motor sport data
AURMTS001 Construct hose and pipe assemblies for competition vehicles
AURTTA118 Develop and carry out diagnostic test strategies

Elective Units

AURASA102 Follow safe working practices in an automotive workplace
AURATA002 Read, interpret and apply engineering drawings
AURATA003 Produce drawings from design concepts
AURETD101 Diagnose and repair electronically controlled steering systems
AURETR006 Solder electrical wiring and circuits
AURETR010 Repair wiring harnesses and looms
AURETR017 Overhaul charging system alternators
AURETR018 Overhaul starting system motors
AURETR026 Remove, replace and program electrical and electronic units and assemblies
AURETR112 Test and repair basic electrical circuits
AURETR120 Diagnose and repair network electronic control systems
AURETR122 Diagnose and repair vehicle dynamic control systems
AURETR124 Diagnose and repair compression ignition engine management systems
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURETR128 Diagnose and repair instruments and warning systems
AURETR129 Diagnose and repair charging systems
AURETR130 Diagnose and repair starting systems
AURETR131 Diagnose and repair ignition systems
AURETR132 Diagnose and repair automotive electrical systems
AURETR143 Diagnose and repair electronic body management systems

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AURETR144 Diagnose and repair integrated engine and transmission management systems
AURETR236 Diagnose and repair electronically controlled suspension systems
AURHTE102 Diagnose and repair heavy vehicle compression ignition engines
AURHTX104 Diagnose and repair heavy vehicle clutch systems
AURJTD103 Diagnose and repair motorcycle suspension systems
AURJTD104 Diagnose and repair motorcycle steering systems
AURJTY001 Repair and align motorcycle frames
AURLTB001 Overhaul light vehicle braking system components
AURLTD104 Diagnose and repair light vehicle steering systems
AURLTF101 Diagnose and repair light vehicle mechanical fuel injection systems
AURLTJ011 Select light vehicle tyres and wheels for specific applications
AURLTJ102 Remove, inspect, repair and refit light vehicle tyres and tubes
AURLTJ113 Remove, inspect and refit light vehicle wheel and tyre assemblies
AURLTQ101 Diagnose and repair light vehicle final drive assemblies
AURLTX102 Diagnose and repair light vehicle automatic transmissions
AURLTX103 Diagnose and repair light vehicle clutch systems
AURMBA101 Transport light competition vehicles and support equipment
AURMDA004 Recover vehicles at motor sport events
AURMDA005 Act as a marshal at motor sport events
AURMDA006 Communicate using flags and signals at motor sport events
AURMDA101 Develop and update motor sport industry knowledge
AURMDA107 Act as a steward at motor sport events
AURMGA101 Set up and dismantle temporary work location and equipment at motor sport events
AURMGA102 Manage personal presentation and development in a motor sport environment
AURMKA001 Manage motor sport data
AURMLA001 Apply motor sport rules and regulations when officiating
AURMLA002 Monitor motor sport official and volunteer application of rules and regulations
AURMLA003 Inspect vehicles and equipment at motor sport events for compliance
AURMMA102 Manage the preparation of motor sport competition vehicles
AURMSA001 Follow motor sport safety and risk management procedures
AURMSA002 Implement and monitor safety and risk management in a motor sport environment
AURMTD001 Test suspension dampers using a dynamometer
AURMTD002 Prepare competition vehicle suspension
AURMTE101 Test engines using a dynamometer
AURMTF001 Analyse and repair performance carburetted fuel systems
AURMTF002 Analyse and repair performance fuel injection systems
AURMTJ001 Select and prepare motor sport competition vehicle tyres and wheels
AURMTQ101 Analyse and repair faults in performance driveline systems

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AURTTA121 Diagnose complex system faults
AURTTB015 Assemble and fit braking system components
AURTTB101 Inspect and service braking systems
AURTTC103 Diagnose and repair cooling systems
AURTTD002 Inspect and service steering systems
AURTTD004 Inspect and service suspension systems
AURTTD005 Overhaul steering system components
AURTTE005 Overhaul engines
AURTTE104 Inspect and service engines
AURTTF007 Overhaul carburettor fuel system components
AURTTF101 Inspect and service petrol fuel systems
AURTTF105 Diagnose and repair engine forced-induction systems
AURTTJ011 Balance wheels and tyres
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTM003 Apply metal to rebuild engine components
AURTTM004 Assemble engine blocks and sub-assemblies
AURTTM008 Dismantle and evaluate engine blocks and sub-assemblies
AURTTM010 Heat treat, straighten and reclaim engine components
AURTTM011 Recondition engine cylinder heads
AURTTQ001 Inspect and service final drive assemblies
AURTTQ004 Overhaul final drive assemblies
AURTTQ103 Inspect and service drive shafts
AURTTS101 Fabricate exhaust systems and components
AURTTX007 Overhaul clutch assemblies
AURTTX008 Overhaul manual transmissions
AURTTX009 Overhaul automatic transmissions
AURTTX102 Inspect and service manual transmissions
AURTTX103 Inspect and service automatic transmissions
AURVTA002 Remove and replace vehicle supplementary restraint systems
AURVTW002 Carry out oxyacetylene brazing of components
AURVTW006 Carry out thermoplastic welding on vehicle trim components
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
AURVTW104 Carry out tungsten inert gas welding
AURVTW105 Carry out spot welding
AURVTW109 Carry out basic gas metal arc welding
MEM07005 Perform general machining*
MEM09002 Interpret technical drawing*
MEM11011 Undertake manual handling*

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MEM12023 Perform engineering measurements*

MEM12024 Perform computations*

MEM13015 Work safely and effectively in manufacturing and engineering

MEM14006 Plan work activities*

MEM16006 Organise and communicate information*

MEM18001 Use hand tools*

MEM18002 Use power tools/hand held operations*

MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment

*Note the following prerequisite unit requirements.

UNIT IN THIS QUALIFICATION	**PREREQUISITE UNIT(S)**
MEM07005 Perform general machining	MEM09002 Interpret technical drawing MEM11011 Undertake manual handling MEM12023 Perform engineering measurements MEM12024 Perform computations MEM13015 Work safely and effectively in manufacturing and engineering MEM14006 Plan work activities MEM16006 Organise and communicate information MEM18001 Use hand tools
MEM09002 Interpret technical drawing	MEM12023 Perform engineering measurements MEM12024 Perform computations MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM11011 Undertake manual handling	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM12023 Perform engineering measurements	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM12024 Perform computations	MEM13015 Work safely and effectively in manufacturing and engineering

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UNIT IN THIS QUALIFICATION	PREREQUISITE UNIT(S)
	MEM16006 Organise and communicate information
MEM14006 Plan work activities	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM16006 Organise and communicate information	MEM13015 Work safely and effectively in manufacturing and engineering
MEM18001 Use hand tools	MEM11011 Undertake manual handling MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM18002 Use power tools/hand held operations	MEM11011 Undertake manual handling MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information

Qualification Mapping Information

Supersedes and is equivalent to AUR30916 Certificate III in Motorsport Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR31020 Certificate III in Automotive Sales

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform sales-related tasks in the automotive service and repair sector.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 20

8 core units, plus

12 elective units, of which:

- **6** units must be from one of the Specialist Elective Groups A or B below
- of the remaining units required to make up the elective unit total:
  - up to **6** may be from the Specialist Elective Groups and/or the general elective units listed below
  - up to **4** may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace

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AURAEA002 Follow environmental and sustainability best practice in an automotive workplace
AURAFA104 Resolve routine problems in an automotive workplace
AURASA102 Follow safe working practices in an automotive workplace
AURSAA001 Process customer complaints in an automotive workplace
AURSCA105 Sell automotive products and services
AURSCA106 Promote automotive products and services
AURSLA001 Comply with legal requirements when selling automotive products and services

Specialist Elective Units

Group A: Parts Interpreting

AURETR125 Test, charge and replace batteries and jump-start vehicles
AURSBA001 Carry out warehousing procedures in an automotive workplace
AURSBA102 Identify and match uncommon automotive parts
AURSCA101 Select and supply automotive parts and products
BSBPRO401 Develop product knowledge
BSBTEC201 Use business software applications
SIRRINV002 Control stock
TLIA2012 Pick and process orders

Group B: Vehicle, Farm Machinery and Motorcycles Sales

AURSCA007 Determine used motor vehicle stock requirements
AURSCA008 Wholesale used motor vehicle stock
AURSCA102 Present automotive products and services for sale
AURSCA103 Apply sales procedures in an automotive workplace
AURSCA109 Provide vehicle technology information
BSBSLS407 Identify and plan sales prospects
BSBSLS408 Present, secure and support sales solutions

General Elective Units

AURACA103 Build customer relations in an automotive workplace
AURAFA001 Use numbers in an automotive workplace
AURAFA002 Read and respond to automotive workplace information
AURAFA103 Communicate effectively in an automotive workplace
AURAMA003 Conduct information sessions in an automotive workplace
AURAMA004 Maintain business image in an automotive workplace
AURAMA102 Communicate business information in an automotive workplace
AURAQA001 Contribute to quality work outcomes in an automotive workplace
AURSCA007 Determine used motor vehicle stock requirements

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AURSCA008 Wholesale used motor vehicle stock
AURSCA010 Appraise and purchase used motor vehicles for sale
AURSCA101 Select and supply automotive parts and products
AURSCA102 Present automotive products and services for sale
AURSCA104 Carry out cash and non-cash payment operations
AURSCA111 Conduct online transactions in an automotive workplace
AURSCP101 Provide information to customers on automotive refinishing products
BSBFIN401 Report on financial activity
BSBWHS332X Apply infection prevention and control procedures to own work activities
SIRRINV001 Receive and handle retail stock
SIRRMER003 Coordinate visual merchandising activities
SIRRRTF001 Balance and secure point-of-sale terminal
SIRXSLS002 Follow point-of-sale procedures
TAEDEL301 Provide work skill instruction
TLIA2012 Pick and process orders
TLIA2020 Replenish stock

Qualification Mapping Information

Supersedes and is equivalent to AUR31016 Certificate III in Automotive Sales.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR31120 Certificate III in Heavy Commercial Vehicle Mechanical Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a broad range of tasks on a variety of heavy commercial vehicles in the automotive service and repair sector.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 36

22 core units, plus

14 elective units, of which:

- **1** unit must be from one of the Specialist Elective Groups A or B below
- of the remaining **13** units required to make up the elective unit total:
  - up to **13** may be from the Specialist Elective Groups and/or the general elective units listed below
  - up to **6** may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

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AURAEA002 Follow environmental and sustainability best practice in an automotive workplace
AURASA102 Follow safe working practices in an automotive workplace
AURETR112 Test and repair basic electrical circuits
AURETR122 Diagnose and repair vehicle dynamic control systems
AURETR124 Diagnose and repair compression ignition engine management systems
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURETR129 Diagnose and repair charging systems
AURETR130 Diagnose and repair starting systems
AURHTB101 Diagnose and repair heavy vehicle air braking systems
AURHTD102 Diagnose and repair heavy commercial vehicle steering systems
AURHTD103 Diagnose and repair heavy commercial vehicle suspension systems
AURHTE102 Diagnose and repair heavy vehicle compression ignition engines
AURHTQ103 Diagnose and repair heavy vehicle drive shafts
AURHTZ101 Diagnose and repair heavy vehicle emission control systems
AURTTA006 Inspect and service hydraulic systems
AURTTA104 Carry out servicing operations
AURTTA118 Develop and carry out diagnostic test strategies
AURTTC103 Diagnose and repair cooling systems
AURTTF102 Inspect and service diesel fuel injection systems
AURTTF105 Diagnose and repair engine forced-induction systems
AURTTK102 Use and maintain tools and equipment in an automotive workplace
AURTTQ001 Inspect and service final drive assemblies

Specialist Elective Units

Group A: Heavy Vehicle Manual Transmission

AURHTX101 Diagnose and repair heavy vehicle manual transmissions

Group B: Heavy Vehicle Automatic Transmission

AURHTX103 Diagnose and repair heavy vehicle automatic transmissions

General Elective Units

AURAFA103 Communicate effectively in an automotive workplace
AURAMA001 Work effectively with others in an automotive workplace
AURETR120 Diagnose and repair network electronic control systems
AURETR132 Diagnose and repair automotive electrical systems
AURETR143 Diagnose and repair electronic body management systems
AURETR144 Diagnose and repair integrated engine and transmission management systems
AURETU103 Service air conditioning and HVAC systems

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AURETU104 Diagnose and repair air conditioning and HVAC components
AURETU105 Retrofit automotive air conditioning and HVAC systems
AURHTB002 Diagnose and repair heavy vehicle hydraulic and air over hydraulic braking systems
AURHTB107 Diagnose and repair heavy commercial vehicle electronic braking systems
AURHTD104 Carry out heavy vehicle wheel alignment operations
AURHTE001 Remove and install heavy vehicle engine assemblies
AURHTF102 Diagnose and repair heavy vehicle diesel fuel injection systems
AURHTJ103 Remove, inspect and refit heavy vehicle wheel and tyre assemblies
AURHTJ106 Remove, inspect, repair and refit heavy vehicle tyres and tubes
AURHTL101 Inspect, diagnose and repair alternative fuel systems in heavy vehicle engines
AURHTQ102 Diagnose and repair heavy commercial vehicle final drive assemblies
AURHTX002 Inspect, test and replace heavy vehicle automatic transmissions
AURHTX104 Diagnose and repair heavy vehicle clutch systems
AURHTY001 Inspect and service mechanical connections of heavy vehicles and trailers over 4.5 tonnes
AURHTY102 Diagnose and repair mechanical connections of heavy vehicles and trailers over 4.5 tonnes
AURTTA014 Assemble and install pneumatic system components
AURTTA105 Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA113 Diagnose and repair hydraulic systems
AURTTB004 Inspect and service air braking systems
AURTTB006 Inspect, service and repair auxiliary braking systems
AURTTB101 Inspect and service braking systems
AURTTC002 Repair radiators
AURTTD002 Inspect and service steering systems
AURTTD004 Inspect and service suspension systems
AURTTE104 Inspect and service engines
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTL003 Install CNG fuel systems
AURTTL006 Install LNG fuel systems
AURTTL009 Install LPG fuel systems
AURTTL104 Inspect and service LNG fuel systems
AURTTL105 Diagnose and repair LNG fuel systems
AURTTX102 Inspect and service manual transmissions
AURTTX103 Inspect and service automatic transmissions
AURTTZ102 Diagnose and repair exhaust systems
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections

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AURVTW104 Carry out tungsten inert gas welding

Qualification Mapping Information

Supersedes is equivalent to AUR31116 Certificate III in Heavy Commercial Vehicle Mechanical Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR31220 Certificate III in Mobile Plant Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a broad range of tasks on a variety of mobile plant machinery in the automotive retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 36

9 core units, plus

27 elective units, of which:

- all units in one of the Specialist Elective Groups A to C must be chosen
- of the remaining units required to make up the unit total:
  - all may be from the Specialist Elective Groups and general elective units listed below
  - up to **6** may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Specialisations

Where relevant, specialisations can be used in this qualification for:

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- Mobile Plant Equipment
- Forklift
- Elevating Work Platform

The achievement of a specialisation will be identified on testamurs as follows:

- AUR31220 Certificate III in Mobile Plant Technology (Mobile Plant Equipment)
- AUR31220 Certificate III in Mobile Plant Technology (Forklift)
- AUR31220 Certificate III in Mobile Plant Technology (Elevating Work Platform)

Mobile Plant Equipment specialisation

Select all units listed in Specialist Elective Group A.

Forklift specialisation

Select all units listed in Specialist Elective Group B.

Elevating Work Platform specialisation

Select all units listed in Specialist Elective Group C.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace
AURASA102 Follow safe working practices in an automotive workplace
AURETR112 Test and repair basic electrical circuits
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURTTA006 Inspect and service hydraulic systems
AURTTA104 Carry out servicing operations
AURTTA105 Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA118 Develop and carry out diagnostic test strategies
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Specialist Elective Units

Group A: Mobile Plant Equipment
AURETR124 Diagnose and repair compression ignition engine management systems
AURETR129 Diagnose and repair charging systems
AURETR130 Diagnose and repair starting systems
AURHTE102 Diagnose and repair heavy vehicle compression ignition engines

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AURHTF102 Diagnose and repair heavy vehicle diesel fuel injection systems
AURKTA005 Inspect, service and repair track type drive and support systems
AURKTA111 Diagnose and repair mobile plant hydraulic systems
AURKTB101 Diagnose and repair mobile plant braking systems
AURKTD102 Diagnose and repair mobile plant steering systems
AURKTQ101 Diagnose and repair mobile plant final drive assemblies
AURKTX101 Diagnose and repair powershift transmissions
AURTTC103 Diagnose and repair cooling systems
AURTTF105 Diagnose and repair engine forced-induction systems

Group B: Forklift
AURETR129 Diagnose and repair charging systems
AURETR130 Diagnose and repair starting systems
AURNTA001 Inspect, service and repair forklift mast assemblies
AURNTB101 Diagnose and repair forklift hydraulic braking systems
AURNTD101 Diagnose and repair forklift hydrostatic steering systems
AURTTA113 Diagnose and repair hydraulic systems
AURTTB101 Inspect and service braking systems
AURTTC103 Diagnose and repair cooling systems
AURTTE104 Inspect and service engines

Group C: Elevating Work Platform
AURHTE102 Diagnose and repair heavy vehicle compression ignition engines
AURHTF102 Diagnose and repair heavy vehicle diesel fuel injection systems
AURHTQ102 Diagnose and repair heavy commercial vehicle final drive assemblies
AURHTQ103 Diagnose and repair heavy vehicle drive shafts
AURLTB103 Diagnose and repair light vehicle hydraulic braking systems
AURTTA113 Diagnose and repair hydraulic systems
AURTTB101 Inspect and service braking systems
AURTTE104 Inspect and service engines
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURVTW101 Carry out manual metal arc welding on components
AURVTW109 Carry out basic gas metal arc welding

General Elective Units

AURACA101 Respond to customer needs and enquiries in an automotive workplace
AURAFA103 Communicate effectively in an automotive workplace
AURATA002 Read, interpret and apply engineering drawings
AURETH002 Service and maintain battery electric vehicles*

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AURETH101 Depower and reinitialise battery electric vehicles
AURETK002 Use and maintain electrical test equipment in an automotive workplace
AURETR005 Install automotive security systems and components
AURETR007 Apply knowledge of automotive electrical circuits and wiring systems
AURETR010 Repair wiring harnesses and looms
AURETR011 Install basic ancillary electrical systems and components
AURETR019 Inspect, service and repair AC electric motor drive systems
AURETR021 Inspect, service and repair electronic management, monitoring and tracking systems
AURETR123 Diagnose and repair spark ignition engine management systems
AURETR124 Diagnose and repair compression ignition engine management systems
AURETR128 Diagnose and repair instruments and warning systems
AURETR129 Diagnose and repair charging systems
AURETR130 Diagnose and repair starting systems
AURETR131 Diagnose and repair ignition systems
AURETR132 Diagnose and repair automotive electrical systems
AURETR144 Diagnose and repair integrated engine and transmission management systems
AURETU103 Service air conditioning and HVAC systems
AURETU104 Diagnose and repair air conditioning and HVAC components
AURETU105 Retrofit automotive air conditioning and HVAC systems
AURHTB101 Diagnose and repair heavy vehicle air braking systems
AURHTE001 Remove and install heavy vehicle engine assemblies
AURHTE102 Diagnose and repair heavy vehicle compression ignition engines
AURHTF102 Diagnose and repair heavy vehicle diesel fuel injection systems
AURHTJ005 Identify and apply heavy vehicle pneumatic wheeled traction performance enhancement systems
AURHTJ103 Remove, inspect and refit heavy vehicle wheel and tyre assemblies
AURHTJ106 Remove, inspect, repair and refit heavy vehicle tyres and tubes
AURHTL101 Inspect, diagnose and repair alternative fuel systems in heavy vehicle engines
AURHTQ102 Diagnose and repair heavy commercial vehicle final drive assemblies
AURHTQ103 Diagnose and repair heavy vehicle drive shafts
AURHTX002 Inspect, test and replace heavy vehicle automatic transmissions
AURHTX104 Diagnose and repair heavy vehicle clutch systems
AURHTZ101 Diagnose and repair heavy vehicle emission control systems
AURKTA001 Synchronise plant and equipment
AURKTA005 Inspect, service and repair track type drive and support systems
AURKTA111 Diagnose and repair mobile plant hydraulic systems
AURKTB101 Diagnose and repair mobile plant braking systems
AURKTD101 Diagnose and repair mobile plant suspension systems
AURKTD102 Diagnose and repair mobile plant steering systems

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AURKTJ012 Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies
AURKTJ016 Use earthmoving and off-the-road tyre handlers
AURKTQ101 Diagnose and repair mobile plant final drive assemblies
AURKTR101 Diagnose and repair electronic over hydraulic control systems
AURKTX101 Diagnose and repair powershift transmissions
AURKTX104 Diagnose and repair continuously variable transmissions
AURLTB103 Diagnose and repair light vehicle hydraulic braking systems
AURLTE001 Remove and install light vehicle engine assemblies
AURLTE102 Diagnose and repair light vehicle engines
AURLTZ101 Diagnose and repair light vehicle emission control systems
AURNTA001 Inspect, service and repair forklift mast assemblies
AURNTB101 Diagnose and repair forklift hydraulic braking systems
AURNTD101 Diagnose and repair forklift hydrostatic steering systems
AURTTA007 Inspect, service and repair pneumatic systems
AURTTA009 Carry out mechanical pre-repair operations
AURTTA011 Install hydraulic systems to specified applications
AURTTA012 Fabricate and install fluid power hose assemblies
AURTTA014 Assemble and install pneumatic system components
AURTTA015 Produce engineering drawings for vehicle components
AURTTA017 Carry out vehicle safety inspections
AURTTA113 Diagnose and repair hydraulic systems
AURTTB004 Inspect and service air braking systems
AURTTB006 Inspect, service and repair auxiliary braking systems
AURTTB015 Assemble and fit braking system components
AURTTB101 Inspect and service braking systems
AURTTC103 Diagnose and repair cooling systems
AURTTC001 Inspect and service cooling systems
AURTTD002 Inspect and service steering systems
AURTTD004 Inspect and service suspension systems
AURTTE005 Overhaul engines
AURTTE104 Inspect and service engines
AURTTF003 Overhaul diesel fuel injection system components
AURTTF101 Inspect and service petrol fuel systems
AURTTF102 Inspect and service diesel fuel injection systems
AURTTF105 Diagnose and repair engine forced-induction systems
AURTTF106 Diagnose and repair petrol carburettor systems
AURTTJ011 Balance wheels and tyres
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTL001 Inspect and service CNG fuel systems
AURTTL003 Install CNG fuel systems

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AURTTL006 Install LNG fuel systems
AURTTL007 Inspect and service LPG fuel systems
AURTTL009 Install LPG fuel systems
AURTTL102 Diagnose and repair CNG fuel systems
AURTTL104 Inspect and service LNG fuel systems
AURTTL105 Diagnose and repair LNG fuel systems
AURTTL108 Diagnose and repair LPG fuel systems
AURTTQ001 Inspect and service final drive assemblies
AURTTQ103 Inspect and service drive shafts
AURTTW001 Carry out soft soldering techniques
AURTTX102 Inspect and service manual transmissions
AURTTX103 Inspect and service automatic transmissions
AURTTX104 Inspect and service hydrostatic transmissions
AURTTX106 Diagnose and repair hydrostatic transmissions
AURTTZ102 Diagnose and repair exhaust systems
AURVTW002 Carry out oxyacetylene brazing of components
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
AURVTW104 Carry out tungsten inert gas welding
AURVTW109 Carry out basic gas metal arc welding
RIIHAN301E Operate elevating work platform
TLILIC0003 Licence to operate a forklift truck
TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

*Note the following prerequisite unit requirements.

UNIT IN THIS QUALIFICATION	PREREQUISITE UNIT
AURETH002 Service and maintain battery electric vehicles	AURETH001 Depower and reinitialise battery electric vehicles

Qualification Mapping Information

Supersedes and is equivalent to AUR31216 Certificate III in Mobile Plant Technology.

Supersedes and is not equivalent to AUR31716 Certificate III in Forklift Technology.

Supersedes and is not equivalent to AUR31916 Certificate III in Elevating Work Platform Technology.

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AUR31316 Certificate III in Automotive Engine Reconditioning

Modification History

Release	Comment
Release 2	Updates to elective bank.
Release 1	New qualification.

Qualification Description

This qualification reflects the role of individuals who recondition engines in the automotive service and repair sector. It is suitable for entry into the automotive specialist service and repair sector.

Entry Requirements

This qualification may be accessed by direct entry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Packaging Rules

Total number of units = 28

13 core units, plus

15 elective units, of which:

- up to **15** units may be chosen from the Elective Units listed below
- up to **5** units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

Core Units

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Unit code	Unit title
AURAEA002	Follow environmental and sustainability best practice in an automotive workplace
AURASA002	Follow safe working practices in an automotive workplace
AURMTA007	Conduct non-destructive testing
AURTTE001	Apply knowledge of engine science
AURTTK001	Use and maintain measuring equipment in an automotive workplace
AURTTK002	Use and maintain tools and equipment in an automotive workplace
AURTTM002	Repair bearing tunnels and connecting rods in engines
AURTTM004	Assemble engine blocks and sub-assemblies
AURTTM007	Carry out crankshaft grinding
AURTTM008	Dismantle and evaluate engine blocks and sub-assemblies
AURTTM009	Fit sleeves and bore and hone engine cylinders
AURTTM011	Recondition engine cylinder heads
AURTTW003	Carry out machining operations

Elective Units

Unit code	Unit title
AURHTE002	Diagnose and repair heavy vehicle compression ignition engines
AURLTE001	Remove and install light vehicle engine assemblies
AURLTE002	Diagnose and repair light vehicle engines
AURTTA005	Select and use bearings, seals, gaskets, sealants and adhesives
AURTTA009	Carry out mechanical pre-repair operations
AURTTA018	Carry out diagnostic procedures

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Unit code	Unit title
AURTTF005	Diagnose and repair engine forced-induction systems
AURTTM001	Operate and monitor computer numerical control machines
AURTTM003	Apply metal to rebuild engine components
AURTTM005	Balance rotating and reciprocating engine components
AURTTM006	Perform advanced machining and blueprinting of engine components
AURTTM010	Heat treat, straighten and reclaim engine components
AURTTM012	Carry out camshaft grinding
AURTTW002	Set, operate and monitor specialist reconditioning machines
AURVTW001	Carry out manual metal arc welding on components
AURVTW003	Carry out advanced gas metal arc welding on vehicle body sections
AURVTW004	Carry out tungsten inert gas welding
AURVTW009	Carry out basic gas metal arc welding
AURVTW018	Carry out oxyacetylene welding, thermal heating and cutting

Qualification Mapping Information

Equivalent to AUR31312 Certificate III in Automotive Engine Reconditioning

Links

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AUR31420 Certificate III in Automotive Diesel Fuel Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a broad range of tasks on a variety of diesel fuel systems in the automotive retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 21

13 core units, plus

8 elective units, of which:

- all **8** units may be from the elective units listed below
- up to **4** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

AURETR112 Test and repair basic electrical circuits

AURETR124 Diagnose and repair compression ignition engine management systems

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AURHTF102 Diagnose and repair heavy vehicle diesel fuel injection systems
AURHTZ101 Diagnose and repair heavy vehicle emission control systems
AURTTA118 Develop and carry out diagnostic test strategies
AURTTE104 Inspect and service engines
AURTTF003 Overhaul diesel fuel injection system components
AURTTF102 Inspect and service diesel fuel injection systems
AURTTF105 Diagnose and repair engine forced-induction systems
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Elective Units
AURAFA103 Communicate effectively in an automotive workplace
AURAMA001 Work effectively with others in an automotive workplace
AURHTE001 Remove and install heavy vehicle engine assemblies
AURHTE102 Diagnose and repair heavy vehicle compression ignition engines
AURLTF102 Diagnose and repair light vehicle diesel fuel injection systems
AURTTA006 Inspect and service hydraulic systems
AURTTA011 Install hydraulic systems to specified applications
AURTTA012 Fabricate and install fluid power hose assemblies
AURTTA104 Carry out servicing operations
AURTTA113 Diagnose and repair hydraulic systems
AURTTC103 Diagnose and repair cooling systems
AURTTZ102 Diagnose and repair exhaust systems
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
AURVTW104 Carry out tungsten inert gas welding
AURVTW109 Carry out basic gas metal arc welding

Qualification Mapping Information

Supersedes and is equivalent to AUR31416 Certificate III in Automotive Diesel Fuel Technology.

Links

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AUR31520 Certificate III in Automotive Diesel Engine Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a range of tasks on a variety of diesel engines and associated systems in the automotive retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 28

14 core units, plus

14 elective units, of which:

- all **14** units may be from the elective units listed below
- up to **5** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

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AURETR112 Test and repair basic electrical circuits
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURHTE102 Diagnose and repair heavy vehicle compression ignition engines
AURHTF102 Diagnose and repair heavy vehicle diesel fuel injection systems
AURTTA104 Carry out servicing operations
AURTTA118 Develop and carry out diagnostic test strategies
AURTTE104 Inspect and service engines
AURTTK001 Use and maintain measuring equipment in an automotive workplace
AURTTK102 Use and maintain tools and equipment in an automotive workplace
AURTTM004 Assemble engine blocks and sub-assemblies
AURTTM008 Dismantle and evaluate engine blocks and sub-assemblies
AURTTM011 Recondition engine cylinder heads

Elective Units

AURAFA103 Communicate effectively in an automotive workplace
AURAMA001 Work effectively with others in an automotive workplace
AURETR124 Diagnose and repair compression ignition engine management systems
AURETR128 Diagnose and repair instruments and warning systems
AURETR129 Diagnose and repair charging systems
AURETR130 Diagnose and repair starting systems
AURETR132 Diagnose and repair automotive electrical systems
AURHTE001 Remove and install heavy vehicle engine assemblies
AURHTX104 Diagnose and repair heavy vehicle clutch systems
AURHTZ101 Diagnose and repair heavy vehicle emission control systems
AURMTE101 Test engines using a dynamometer
AURTTA009 Carry out mechanical pre-repair operations
AURTTA105 Select and use bearings, seals, gaskets, sealants and adhesives
AURTTF102 Inspect and service diesel fuel injection systems
AURTTF105 Diagnose and repair engine forced-induction systems
AURTTL001 Inspect and service CNG fuel systems
AURTTL102 Diagnose and repair CNG fuel systems
AURVTW101 Carry out manual metal arc welding on components
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
AURVTW109 Carry out basic gas metal arc welding
MEM05006 Perform brazing and or silver soldering*
MEM05007 Perform manual heating and thermal cutting*
MEM09002 Interpret technical drawing*
MEM11011 Undertake manual handling*
MEM12023 Perform engineering measurements*

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MEM12024 Perform computations*
MEM13015 Work safely and effectively in manufacturing and engineering
MEM14006 Plan work activities*
MEM16006 Organise and communicate information*
MEM18001 Use hand tools*
MEM27004 Maintain and repair engine lubrication systems*

*Note the following prerequisite unit requirements.

UNIT IN THIS QUALIFICATION	**PREREQUISITE UNIT(S)**
MEM05006 Perform brazing and or silver soldering	MEM11011 Undertake manual handling MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM05007 Perform manual heating and thermal cutting	MEM09002 Interpret technical drawing MEM11011 Undertake manual handling MEM12023 Perform engineering measurements MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM09002 Interpret technical drawing	MEM12023 Perform engineering measurements MEM12024 Perform computations MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM11011 Undertake manual handling	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM12023 Perform engineering measurements	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information

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UNIT IN THIS QUALIFICATION	PREREQUISITE UNIT(S)
MEM12024 Perform computations	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM14006 Plan work activities	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM16006 Organise and communicate information	MEM13015 Work safely and effectively in manufacturing and engineering
MEM18001 Use hand tools	MEM11011 Undertake manual handling MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM27004 Maintain and repair engine lubrication systems	MEM09002 Interpret technical drawing MEM11011 Undertake manual handling MEM12023 Perform engineering measurements MEM12024 Perform computations MEM13015 Work safely and effectively in manufacturing and engineering MEM14006 Plan work activities MEM16006 Organise and communicate information MEM18001 Use hand tools

Qualification Mapping Information

Supersedes and is equivalent to AUR31516 Certificate III in Automotive Diesel Engine Technology.

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AUR31820 Certificate III in Heavy Commercial Trailer Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a broad range of tasks on a variety of heavy commercial trailers and associated systems in the automotive retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 28

11 core units, plus

17 elective units, of which:

- all **17** units may be from the elective units listed below
- up to **5** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

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AURETR009 Install vehicle lighting and wiring systems
AURETR112 Test and repair basic electrical circuits
AURETR122 Diagnose and repair vehicle dynamic control systems
AURHTB101 Diagnose and repair heavy vehicle air braking systems
AURHTD103 Diagnose and repair heavy commercial vehicle suspension systems
AURHTJ103 Remove, inspect and refit heavy vehicle wheel and tyre assemblies
AURHTY102 Diagnose and repair mechanical connections of heavy vehicles and trailers over 4.5 tonnes
AURTTA118 Develop and carry out diagnostic test strategies
AURTTK102 Use and maintain tools and equipment in an automotive workplace

Elective Units

AUMGTY002 Install vehicle components
AURACA101 Respond to customer needs and enquiries in an automotive workplace
AURAFA103 Communicate effectively in an automotive workplace
AURAQA002 Inspect technical quality of work in an automotive workplace
AURATA002 Read, interpret and apply engineering drawings
AURETR010 Repair wiring harnesses and looms
AURETR011 Install basic ancillary electrical systems and components
AURHTB002 Diagnose and repair heavy vehicle hydraulic and air over hydraulic braking systems
AURHTB107 Diagnose and repair heavy commercial vehicle electronic braking systems
AURHTD104 Carry out heavy vehicle wheel alignment operations
AURHTJ102 Select heavy vehicle tyres, wheels and rims for specific applications
AURHTJ106 Remove, inspect, repair and refit heavy vehicle tyres and tubes
AURHTR105 Diagnose and repair heavy commercial trailer electronically controlled roll stability systems
AURHTY001 Inspect and service mechanical connections of heavy vehicles and trailers over 4.5 tonnes
AURTTA006 Inspect and service hydraulic systems
AURTTA011 Install hydraulic systems to specified applications
AURTTA012 Fabricate and install fluid power hose assemblies
AURTTA014 Assemble and install pneumatic system components
AURTTA104 Carry out servicing operations
AURTTA113 Diagnose and repair hydraulic systems
AURTTB004 Inspect and service air braking systems
AURTTB006 Inspect, service and repair auxiliary braking systems
AURTTB015 Assemble and fit braking system components
AURTTB101 Inspect and service braking systems
AURTTD004 Inspect and service suspension systems

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AURTTJ011 Balance wheels and tyres
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting
AURVTW101 Carry out manual metal arc welding on components
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
AURVTW109 Carry out basic gas metal arc welding

Qualification Mapping Information

Supersedes and is equivalent to AUR31816 Certificate III in Heavy Commercial Trailer Technology.

Links

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AUR32120 Certificate III in Automotive Body Repair Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a broad range of tasks when repairing and maintaining the body of cars, heavy vehicles and other vehicles in the automotive service and repair sector.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 31

17 core units, plus

14 elective units, of which:

- **8** units from one of the Specialist Elective Groups A to C below must be chosen
- of the remaining units required to make up the elective unit total:
  - up to **6** may be from the Specialist Elective Groups and/or the general elective units listed below
  - up to **5** may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

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AURAEA002 Follow environmental and sustainability best practice in an automotive workplace
AURAFA108 Interpret and apply automotive repair instructions
AURASA102 Follow safe working practices in an automotive workplace
AURETR042 Remove, refit and operate electrical components following body repair activities
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURTTK102 Use and maintain tools and equipment in an automotive workplace
AURTTY001 Repair vehicle chassis, frame and associated components
AURVTN003 Remove and store vehicle body components
AURVTN022 Repair vehicle body misalignment
AURVTN104 Remove, replace and align bolt-on vehicle body panels and components
AURVTN116 Repair vehicle body panels using filler
AURVTN120 Remove and replace major welded panels on vehicles
AURVTN123 Repair adhesive bonded structural damage on vehicles
AURVTN132 Inspect vehicle damage and determine repair procedures
AURVTN135 Apply original equipment manufacturer repair procedures during vehicle repairs
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
AURVTW105 Carry out spot welding

Specialist Elective Units

Group A: Vehicle Body Repair

AURVTA002 Remove and replace vehicle supplementary restraint systems
AURVTN005 Remove and replace adhesive attached components on vehicles
AURVTN017 Repair vehicle thermoplastic body panels and components
AURVTN018 Repair and replace vehicle structural damage
AURVTN029 Set up and operate universal vehicle measuring systems
AURVTN031 Carry out vehicle sectional repairs
AURVTN102 Carry out non-structural vehicle panel repairs
AURVTN113 Carry out paint-less dent repairs on vehicle body panels
AURVTN115 Repair vehicle body panels using metal finishing
AURVTN119 Repair vehicle structural damage by riveting
AURVTN126 Repair vehicle aluminium body panels without the use of body filler
AURVTN127 Repair vehicle aluminium body panels using filler
AURVTN128 Identify and repair high strength steel vehicle components

Group B: Vehicle Body Restoration

AURTTW001 Carry out soft soldering techniques

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AURVTN021 Repair vehicle body components using lead wiping
AURVTN025 Repair corroded vehicle body panels and components
AURVTN115 Repair vehicle body panels using metal finishing
AURVTS001 Fabricate wooden components for vehicles
AURVTS002 Repair wooden components in vehicles
AURVTS006 Fabricate automotive and marine trim components
AURVTS103 Fabricate vehicle composite material components
AURVTS105 Fabricate vehicle body panels and components
AURVTW104 Carry out tungsten inert gas welding
MEM05004 Perform routine oxy fuel gas welding*

Group C: Heavy Vehicle Body and Chassis Repair
AUMABA012 Operate load shifting equipment
AUMGTY002 Install vehicle components
AURTTA020 Apply heat induction processes
AURVTN029 Set up and operate universal vehicle measuring systems
AURVTN119 Repair vehicle structural damage by riveting
AURVTN126 Repair vehicle aluminium body panels without the use of body filler
AURVTP113 Prepare vehicle substrates for refinishing
AURVTW104 Carry out tungsten inert gas welding
MEM24001B Perform basic penetrant testing*
RIIWHS204D Work safely at heights

General Elective Units
AURAFA002 Read and respond to automotive workplace information
AURAFA104 Resolve routine problems in an automotive workplace
AURAMA001 Work effectively with others in an automotive workplace
AURETH011 Depower and reinitialise hybrid electric vehicles
AURETH101 Depower and reinitialise battery electric vehicles
AURETR149 Apply knowledge of ADAS technology to vehicle pre-repair scans
AURVTA001 Prepare vehicles for customer use
AURVTN006 Remove and replace mechanical units during vehicle repair
AURVTN012 Install vehicle sunroofs
AURVTN030 Service air compressors and air lines
AURVTN113 Carry out paint-less dent repairs on vehicle body panels
AURVTN133 Service and repair air compressors and components
AURVTN143 Identify and repair high-strength aluminium components
AURVTP005 Apply rust prevention and sound deadening materials to vehicle body components

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AURVTS104 Repair vehicle composite material components
AURVTT009 Remove and replace vehicle and vessel seats and fittings
AURVTT121 Select and apply adhesives in automotive and marine service and repair work
AURVTV001 Remove, replace and test non-electrical vehicle components and accessories
AURVTW007 Carry out oxyacetylene thermal heating and cutting on vehicle body sections
BSBWHS332X Apply infection prevention and control procedures to own work activities
MEM11011 Undertake manual handling*
MEM13015 Work safely and effectively in manufacturing and engineering
MEM16006 Organise and communicate information*
MEM18001 Use hand tools*
TAEDEL301 Provide work skill instruction

*Note the following prerequisite unit requirements.

UNIT IN THIS QUALIFICATION	PREREQUISITE UNIT(S)
MEM05004 Perform routine oxy fuel gas welding	MEM11011 Undertake manual handling MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM11011 Undertake manual handling	MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information
MEM16006 Organise and communicate information	MEM13015 Work safely and effectively in manufacturing and engineering
MEM24001B Perform basic penetrant testing	MEM18001C Use hand tools
MEM18001 Use hand tools	MEM11011 Undertake manual handling MEM13015 Work safely and effectively in manufacturing and engineering MEM16006 Organise and communicate information

Qualification Mapping Information

Supersedes and is equivalent to AUR32116 Certificate III in Automotive Body Repair Technology.

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AUR32220 Certificate III in Automotive Glazing Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who remove, install, repair and manage glazing technical operations of cars and other vehicles in the automotive industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 30

15 core units, plus

15 elective units, of which:

- all **15** units may be from the elective units listed below
- up to **6** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURACA103 Build customer relations in an automotive workplace

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURAFA103 Communicate effectively in an automotive workplace

AURASA102 Follow safe working practices in an automotive workplace

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AURTTK102 Use and maintain tools and equipment in an automotive workplace
AURVTG007 Clean vehicle glass surfaces
AURVTG101 Repair laminated glass windscreens
AURVTG102 Remove and install rubber glazed windscreens
AURVTG104 Remove and install direct glazed windscreens
AURVTG109 Remove and install vehicle fixed body glass
AURVTG110 Remove and install vehicle movable body glass
AURVTG112 Remove and install heavy vehicle rubber and direct glazed windscreens
AURVTG113 Remove and install large vehicle windscreens
AURVTN111 Remove and install vehicle rear vision mirrors
MSFGG3039 Manually move glass

Elective Units

AUMGTG001 Install fixed and movable glass components on vehicles
AURAFA002 Read and respond to automotive workplace information
AURAFA104 Resolve routine problems in an automotive workplace
AURAMA001 Work effectively with others in an automotive workplace
AURANN011 Estimate and quote automotive body repairs
AURATA005 Estimate and quote automotive mechanical and electrical repairs
AURETH011 Depower and reinitialise hybrid electric vehicles
AURETH101 Depower and reinitialise battery electric vehicles
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURSAA001 Process customer complaints in an automotive workplace
AURSCA101 Select and supply automotive parts and products
AURSCA104 Carry out cash and non-cash payment operations
AURVTA001 Prepare vehicles for customer use
AURVTG008 Cut and process vehicle and machinery flat laminated glass
AURVTG011 Install side vehicle windows
AURVTG103 Remove and install butyl sealed windscreens
AURVTG105 Remove and install framed type windscreens
AURVTN135 Apply original equipment manufacturer repair procedures during vehicle repairs
AURVTP002 Mask vehicle panels and components
AURVTT007 Clean plastic trim and fittings of vehicles
AURVTT008 Clean vehicle interior trim
AURVTV001 Remove, replace and test non-electrical vehicle components and accessories
BSBPEF301 Organise personal work priorities
BSBWHS311 Assist with maintaining workplace safety
BSBXTW301 Work in a team

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MSFGG3039 Manually move glass
SIRRINV002 Control stock
TAEDEL301 Provide work skill instruction

Qualification Mapping Information

Supersedes and is equivalent to AUR32216 Certificate III in Automotive Glazing Technology.

Links

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AUR32320 Certificate III in Automotive and Marine Trimming Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who manufacture, repair and maintain trim components of a range of motor vehicles, marine craft, recreational and other vehicles in the automotive industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 30

12 core units, plus

18 elective units, of which:

- all **18** units may be from the elective units listed below
- up to **5** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURAMA001 Work effectively with others in an automotive workplace

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AURASA102 Follow safe working practices in an automotive workplace
AURTTK102 Use and maintain tools and equipment in an automotive workplace
AURVTN135 Apply original equipment manufacturer repair procedures during vehicle repairs
AURVTS006 Fabricate automotive and marine trim components
AURVTT002 Carry out repairs and alterations to automotive and marine trim
AURVTT003 Remove and replace automotive and marine interior trim components
AURVTT004 Trim vehicle components
AURVTT005 Select trim and fabric materials
AURVTT012 Conduct sewing operations
AURVTT121 Select and apply adhesives in automotive and marine service and repair work

Elective Units

AUMGTG001 Install fixed and moveable glass components on vehicles
AUMGTS004 Fabricate parts for vehicle sub-assemblies
AURAAA002 Determine retail rates for automotive products and services
AURAFA002 Read and respond to automotive workplace information
AURAFA104 Resolve routine problems in an automotive workplace
AURATA005 Estimate and quote automotive mechanical and electrical repairs
AURETH011 Depower and reinitialise hybrid electric vehicles
AURETH101 Depower and reinitialise battery electric vehicles
AURETR006 Solder electrical wiring and circuits
AURETR008 Remove and replace electrical units and assemblies
AURETR010 Repair wiring harnesses and looms
AURETR026 Remove, replace and program electrical and electronic units and assemblies
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURETR132 Diagnose and repair automotive electrical systems
AURVTA002 Remove and replace vehicle supplementary restraint systems
AURVTN111 Remove and install vehicle rear vision mirrors
AURVTP002 Mask vehicle panels and components
AURVTP005 Apply rust prevention and sound deadening materials to vehicle body components
AURVTP008 Clean and polish vehicle paint surfaces
AURVTP019 Prepare and paint plastic and composite vehicle surfaces
AURVTP107 Touch up minor vehicle paintwork damage
AURVTS104 Repair vehicle composite material components
AURVTT009 Remove and replace vehicle and vessel seats and fittings
AURVTT010 Remove and manufacture or repair vehicle head lining
AURVTT013 Fabricate and fit loose and fitted covers to vehicle seats and components
AURVTT014 Fabricate and fit marine covers

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AURVTT015 Fabricate and install canvas products for automotive and marine components
AURVTT017 Fabricate and install automotive and marine floor coverings
AURVTT018 Fabricate and install automotive and marine soft top hoods
AURVTT019 Fabricate and install automotive and marine frames, canopies and side curtains
AURVTT020 Select and use leather in automotive and marine trimming
AURVTV001 Remove, replace and test non-electrical vehicle components and accessories
AURVTW006 Carry out thermoplastic welding on vehicle trim components
AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections
MSFUP3001 Apply traditional foundations to upholstered furniture
MSTLG3001 Make a prototype
MSTTF2002 Cut, bend and shape metal
MSTTF2012 Stitch by hand
MSTTF2015 Install products on and off site
MSTTF3002 Gain customer acceptance of service proposal
TAEDEL301 Provide work skill instruction

Qualification Mapping Information

Supersedes and is equivalent to AUR32316 Certificate III in Automotive and Marine Trimming Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR32420 Certificate III in Automotive Refinishing Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who paint, refinish, repair and maintain painted surfaces on a range of automotive vehicles, recreational vehicles and other vehicles in the automotive industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 30

18 core units, plus

12 elective units, of which:

- all **12** units may be from the elective units listed below
- up to **5** units may be from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURAFA108 Interpret and apply automotive repair instructions

AURASA102 Follow safe working practices in an automotive workplace

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AURVTP002 Mask vehicle panels and components
AURVTP006 Apply refinishing primers to vehicle surfaces
AURVTP019 Prepare and paint plastic and composite vehicle surfaces
AURVTP020 De-nib, buff and polish vehicle painted surfaces
AURVTP101 Remove paint from vehicle painted surfaces
AURVTP103 Prepare vehicle spray painting equipment for use
AURVTP104 Apply basic colour matching techniques using vehicle paint codes
AURVTP110 Prepare and operate vehicle paint drying equipment
AURVTP113 Prepare vehicle substrates for refinishing
AURVTP114 Colour match multi-layer and clear over base two-pack paints on vehicles and components
AURVTP115 Match direct gloss solid paint colour on vehicles or components
AURVTP117 Rectify and touch up vehicle paint faults using clear over base two-pack systems
AURVTP123 Apply clear over base two-pack refinishing materials to vehicle body components
AURVTP124 Apply clear over base multi-layer and pearl refinishing materials to vehicle body components
AURVTP125 Apply water-based refinishing materials to vehicle bodies and substrates

Elective Units

AURAFA002 Read and respond to automotive workplace information
AURAFA104 Resolve routine problems in an automotive workplace
AURAMA001 Work effectively with others in an automotive workplace
AURETH011 Depower and reinitialise hybrid electric vehicles
AURETH101 Depower and reinitialise battery electric vehicles
AURETR125 Test, charge and replace batteries and jump-start vehicles
AURVTA001 Prepare vehicles for customer use
AURVTA003 Inspect vehicle paint, trim and accessories and recommend repair procedures
AURVTN005 Remove and replace adhesive attached components on vehicles
AURVTN017 Repair vehicle thermoplastic body panels and components
AURVTN132 Inspect vehicle damage and determine repair procedures
AURVTN135 Apply original equipment manufacturer repair procedures during vehicle repairs
AURVTP026 Apply basic airbrush techniques to vehicle body panels
AURVTP107 Touch up minor vehicle paintwork damage
AURVTP109 Apply vehicle body film wrapping
AURVTP111 Apply solid acrylic two-pack materials to vehicle components
AURVTP112 Apply air dry and polyurethane refinishing materials
AURVTP116 Rectify and touch up vehicle direct gloss paint faults using two-pack systems

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AURVTP118 Rectify vehicle multi-layer and pearl paint faults using two-pack systems
AURVTP128 Carry out custom painting techniques to vehicle body panels
TAEDEL301 Provide work skill instruction

Qualification Mapping Information

No equivalent qualification. Supersedes and is not equivalent to AUR32416 Certificate III in Automotive Refinishing Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR32518 Certificate III in Automotive Underbody Technology

Modification History

Release	Comment
Release 1	New qualification.

Qualification Description

This qualification reflects the role of individuals who perform a range of services and repairs on tyres, wheels, steering, suspension and brakes. It applies to those working in the light vehicle automotive retail, service and repair industry.

Entry Requirements

This qualification may be accessed by direct entry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Packaging Rules

Total number of units = 28

13 core units, plus

15 elective units, of which:

- up to **15** units may be chosen from the Elective Units listed below
- up to **5** units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

Core Units

Unit code	Unit title	Pre-requisite unit
AURAEA002	Follow environmental and sustainability best practice in an	

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Unit code	Unit title	Pre-requisite unit
	automotive workplace	
AURASA002	Follow safe working practices in an automotive workplace	
AURETR025	Test, charge and replace batteries and jump-start vehicles	
AURLTB003	Diagnose and repair light vehicle hydraulic braking systems	
AURLTD004	Diagnose and repair light vehicle steering systems	
AURLTD005	Diagnose and repair light vehicle suspension systems	
AURLTJ011	Select light vehicle tyres and wheels for specific applications	
AURLTJ002	Remove, inspect, repair and refit light vehicle tyres and tubes	
AURLTJ013	Remove, inspect and refit light vehicle wheel and tyre assemblies	
AURLTQ012	Diagnose and repair light vehicle drive shafts	
AURTTA018	Carry out diagnostic procedures	
AURTTJ011	Balance wheels and tyres	
AURTTK002	Use and maintain tools and equipment in an automotive workplace	

Elective Units

Unit code	Unit title	Pre-requisite unit
AURAFA003	Communicate effectively in an automotive workplace	
AURAMA001	Work effectively with others in an automotive workplace	
AURETD011	Diagnose and repair electronically controlled steering systems	
AURETR012	Test and repair basic electrical circuits	

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Unit code	Unit title	Pre-requisite unit
AURETR136	Diagnose and repair electronically controlled suspension systems	
AURLLD011	Determine compliance of steering and suspension modifications	
AURLTD006	Carry out light vehicle wheel alignment operations	
AURLTD013	Carry out advanced light vehicle wheel alignment operations	AURLTD006
AURLTX013	Diagnose and repair light vehicle clutch systems	
AURTTB001	Inspect and service braking systems	
AURTTB013	Machine brake drums and brake disc rotors	
AURTTB015	Assemble and fit braking system components	
AURTTD002	Inspect and service steering systems	
AURTTD004	Inspect and service suspension systems	
AURTTJ012	Remove, inspect and refit wheel hubs and associated brake components	
AURTTQ003	Inspect and service drive shafts	
AURTTX015	Inspect and service clutch systems	
AURTTZ002	Diagnose and repair exhaust systems	
AURVTW009	Carry out basic gas metal arc welding	
AURVTW018	Carry out oxyacetylene welding, thermal heating and cutting	

Qualification Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence Status

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AUR32518 Certificate III in Automotive Underbody Technology	AUR32516 Certificate III in Automotive Underbody Technology	Qualification updated to reflect updates to core and elective bank of units	Not equivalent

Links

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AUR32616 Certificate III in Automotive Tyre Management

Modification History

Release	Comment
Release 3	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0. Release created to reflect updated units of competency.
Release 2	Updates to elective bank.
Release 1	New qualification.

Qualification Description

This qualification reflects the role of individuals who perform a range of tasks relating to managing tyres in the automotive industry.

^ From 1 July 2022 the elective unit HLTAID003 must no longer be delivered and will be replaced in the Packaging Rules by the unit HLTAID011 - for more information see: https://asqa.gov.au/news-events/news/reminder-about-superseded-hlt-first-aid-units

Entry Requirements

Those undertaking Certificate III in Automotive Tyre Management must have completed AUR21916 Certificate II in Automotive Tyre Servicing Technology, or be able to demonstrate equivalent competency.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Packaging Rules

Total number of units = 12

7 core units, plus

5 elective units, of which:

- up to **5** units may be chosen from the Elective Units listed below

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- up to **2** units may be chosen from a Certificate II qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

Core Units

Unit code	Unit title
AURAEA003	Monitor environmental and sustainability best practice in an automotive workplace
AURAMA003	Conduct information sessions in an automotive workplace
AURAQA003	Maintain quality processes in an automotive workplace
AURATA004	Provide technical guidance
AURKKJ001	Manage use of tyre management software
AURLTJ104	Provide advice on the effects of wheel and tyre combinations
FDFPPL3003A	Support and mentor individuals and groups

Elective Units

Unit code	Unit title
AURACA002	Manage complex customer requirements in an automotive workplace
AURAFA003	Communicate effectively in an automotive workplace
AURAFA004	Resolve routine problems in an automotive workplace
AURAKA002	Adapt work processes to new technologies in an automotive workplace
AURAMA002	Communicate business information in an automotive workplace
AURAMA004	Maintain business image in an automotive workplace
AURAQA001	Contribute to quality work outcomes in an automotive workplace

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Unit code	**Unit title**
AURAQA002	Inspect technical quality of work in an automotive workplace
AURASA002	Follow safe working practices in an automotive workplace
AURHTJ002	Select heavy vehicle tyres, wheels and rims for specific applications
AURKTJ004	Conduct non-destructive testing of wheel and rim assemblies
AURKTJ013	Perform minor repairs to earthmoving and off-the-road tyres
AURKTJ015	Select earthmoving and off-the-road tyres, wheels and rim assemblies for specific applications
AURKTJ016	Use earthmoving and off-the-road tyre handlers
AURLTJ011	Select light vehicle tyres and wheels for specific applications
AURSAA001	Process customer complaints in an automotive workplace
AURSCA002	Present automotive products and services for sale
AURSCA004	Carry out cash and non-cash payment operations
AUMAQA001	Apply quality assurance techniques
BSBPRO401	Develop product knowledge
BSBWOR204	Use business technology
CSCORG003	Prepare reports
HLTAID003 ^ **HLTAID011**	Provide first aid **Provide First Aid (must be delivered from 1 July 2022)**
MSMSUP390	Use structured problem solving tools
PMBPROD336	Inspect heavy off-the-road tyres
RIICOM201D	Communicate in the workplace
RIIQUA201D	Maintain and monitor site quality standards
RIIRIS201D	Conduct local risk control
RIIRIS301D	Apply risk management processes
RIIWHS201D	Work safely and follow WHS policies and procedures

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Unit code	Unit title
RIIWHS204D	Work safely at heights
RIIWHS301D	Conduct safety and health investigations
SIRRINV001	Receive and handle retail stock
SIRRINV002	Control stock
SIRXRSK002	Maintain store security
TAEDEL301	Provide work skill instruction

Qualification Mapping Information

Equivalent to AUR32613 Certificate III in Automotive Tyre Management

Links

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AUR40116 Certificate IV in Automotive Management

Modification History

Release	Comment
Release 1	New qualification.

Qualification Description

This qualification reflects the role of individuals who perform management roles in an automotive retail, service and repair environment.

Entry Requirements

This qualification may be accessed by direct entry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Packaging Rules

Total number of units = 10

6 core units, plus

4 elective units, of which:

- up to **4** units may be chosen from the Elective Units listed below
- up to **2** units may be chosen from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

Core Units

Unit code	Unit title
AURACA003	Build customer relations in an automotive workplace

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Unit code	Unit title
AURAEA004	Manage environmental and sustainability best practice in an automotive workplace
AURAMA004	Maintain business image in an automotive workplace
AURAMA005	Manage complex customer issues in an automotive workplace
BSBSMB407	Manage a small team
BSBWHS401	Implement and monitor WHS policies, procedures and programs to meet legislative requirements

Elective Units

Unit code	Unit title
AURAAA002	Determine retail rates for automotive products and services
AURAKA002	Adapt work processes to new technologies in an automotive workplace
AURALA001	Comply with legal aspects of a service and repair contract in an automotive workplace
AURAMA003	Conduct information sessions in an automotive workplace
AURAQA003	Maintain quality processes in an automotive workplace
AURATA005	Estimate and quote automotive mechanical and electrical repairs
BSBITS401	Maintain business technology
BSBLDR402	Lead effective workplace relationships
BSBSMB406	Manage small business finances
BSBWOR404	Develop work priorities
FNSASIC302	Develop, present and negotiate client solutions
TAEDEL404	Mentor in the workplace

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Qualification Mapping Information

Equivalent to AUR40112 Certificate IV in Automotive Management

Links

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AUR40216 Certificate IV in Automotive Mechanical Diagnosis

Modification History

Release	Comment
Release 1	New qualification.
Release 2	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0. Release created to reflect updated units of competency.

Qualification Description

This qualification reflects the role of individuals who perform advanced diagnostic tasks in the automotive retail, service and repair industry.

Entry Requirements

Those undertaking the Certificate IV in Automotive Mechanical Diagnosis must have completed an automotive mechanical Certificate III qualification, or be able to demonstrate equivalent competency.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Packaging Rules

Total number of units = 10

1 core unit, plus

9 elective units, of which:

- up to **9** units may be chosen from the Elective Units listed below
- up to **2** units may be chosen from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

Core Units

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Unit code	Unit title	Prerequisite unit
AURTTA021	Diagnose complex system faults	

Elective Units

Unit code	Unit title	Prerequisite unit
AURETH003	Diagnose and repair high voltage rechargeable energy storage systems in battery electric vehicles	AURETH001
AURETH004	Diagnose and repair traction motor speed control systems in battery electric vehicles	AURETH001
AURETH005	Diagnose and repair high voltage traction motors in battery electric vehicles	AURETH001
AURETH006	Diagnose and repair auxiliary motors and associated components in battery electric vehicles	AURETH001
AURETH007	Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles	AURETH001
AURETH008	Diagnose and repair HVAC and rechargeable energy storage cooling systems in battery electric vehicle	AURETH001
AURETH009	Diagnose and repair DC to DC converters in battery electric vehicles	AURETH001 AURETR025
AURETH010	Diagnose and repair high voltage rechargeable energy storage systems in hybrid electric vehicles	AURETR025
AURETR037	Diagnose complex faults in light vehicle safety systems	
AURETU006	Diagnose complex faults in air conditioning and HVAC systems	
AURHTB106	Diagnose complex faults in heavy commercial vehicle braking systems	
AURHTD106	Diagnose complex faults in heavy commercial vehicle steering and suspension systems	

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Unit code	Unit title	Prerequisite unit
AURHTE103	Diagnose complex faults in heavy vehicle diesel engines	
AURHTX106	Diagnose complex faults in heavy commercial vehicle transmission and driveline systems	
AURJTD105	Diagnose complex faults in motorcycle steering and suspension systems	
AURJTE102	Diagnose complex faults in motorcycle engine and transmission systems	
AURKTA109	Diagnose complex faults in mobile plant hydraulic systems	
AURKTB103	Diagnose complex faults in mobile plant braking systems	
AURKTD105	Diagnose complex faults in mobile plant steering and suspension systems	
AURKTX103	Diagnose complex faults in mobile plant transmission and driveline systems	
AURLTB104	Diagnose complex faults in light vehicle braking systems	
AURLTD109	Diagnose complex faults in light vehicle steering and suspension systems	
AURLTE104	Diagnose complex faults in light vehicle petrol engines	
AURLTE105	Diagnose complex faults in light vehicle diesel engines	
AURLTX104	Diagnose complex faults in light vehicle automatic transmission and driveline systems	
AURMTA007	Conduct non-destructive testing	
AURMTE001	Test engines using a dynamometer	
AURMTF001	Analyse and repair performance carburetted fuel systems	
AURMTF002	Analyse and repair performance fuel injection systems	
AURMTQ001	Analyse and repair faults in performance driveline systems	
AURTTA125	Diagnose complex faults in vehicle integrated stability control systems	

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Unit code	Unit title	Prerequisite unit
AURTTA026	Diagnose complex faults in electronic over hydraulic systems	
AURTTL111	Diagnose complex faults in CNG fuel systems	
AURTTL112	Diagnose complex faults in LNG fuel systems	
AURTTL113	Diagnose complex faults in LPG fuel systems	
AURTTR101	Diagnose complex faults in engine management systems	

Qualification Mapping Information

Equivalent to AUR40212 Certificate IV in Automotive Mechanical Diagnosis

Links

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AUR40320 Certificate IV in Motor Sport Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform as team leaders and supervisors in the motor sport industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Those undertaking the Certificate IV in Motorsport Technology must have completed AUR30920 Certificate III in Motor Sport Technology or be able to demonstrate equivalent competency.

Packaging Rules

Total number of units = 10

1 core unit, plus

9 elective units, of which:

- all **9** units may be from the elective units listed below
- up to **2** units may be from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

BSBWHS411 Implement and monitor WHS policies, procedures and programs

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Elective Units

AURAMA006 Contribute to planning and implementing business improvement in an automotive workplace

AURETR112 Test and repair basic electrical circuits

AURETR123 Diagnose and repair spark ignition engine management systems

AURLTB001 Overhaul light vehicle braking system components

AURLTD105 Diagnose and repair light vehicle suspension systems

AURLTQ101 Diagnose and repair light vehicle final drive assemblies

AURLTQ102 Diagnose and repair light vehicle drive shafts

AURLTX101 Diagnose and repair light vehicle manual transmissions

AURMCA101 Manage motor sport team media liaison

AURMCA102 Manage motor sport team promotional partnerships and marketing

AURMGA102 Manage personal presentation and development in a motor sport environment

AURMKA001 Manage motor sport data

AURMMA005 Manage team pit lane and service area operations at motor sport events

AURMMA006 Develop and implement race strategies for motor sport events

AURMMA102 Manage the preparation of motor sport competition vehicles

AURMMA103 Manage motor sport operations

AURMMA104 Manage motor sport team development

AURMTA007 Conduct non-destructive testing

AURMTA008 Apply aerodynamic and vehicle dynamic principles and effects to competition vehicles

AURMTA103 Determine material suitability for competition vehicle components

AURMTA109 Collect and log motor sport data

AURMTD001 Test suspension dampers using a dynamometer

AURMTD002 Prepare competition vehicle suspension

AURMTE101 Test engines using a dynamometer

AURMTF001 Analyse and repair performance carburetted fuel systems

AURMTF002 Analyse and repair performance fuel injection systems

AURMTJ001 Select and prepare motor sport competition vehicle tyres and wheels

AURMTQ101 Analyse and repair faults in performance driveline systems

AURTTA121 Diagnose complex system faults

AURTTD004 Inspect and service suspension systems

AURTTD005 Overhaul steering system components

AURTTE005 Overhaul engines

AURTTF003 Overhaul diesel fuel injection system components

AURTTF007 Overhaul carburettor fuel system components

AURTTF101 Inspect and service petrol fuel systems

AURTTF106 Diagnose and repair petrol carburettor systems

AURTTQ004 Overhaul final drive assemblies

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AURTTX007 Overhaul clutch assemblies

AURTTX008 Overhaul manual transmissions

AURTTX009 Overhaul automatic transmissions

AURTTX010 Overhaul hydrostatic transmissions

AURTTX011 Overhaul torque converters

MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment

SISSPAR006 Prepare and present athlete sponsorship proposals

SITXMPR006 Obtain and manage sponsorship

Qualification Mapping Information

Supersedes and is equivalent to AUR40316 Certificate IV in Motorsport Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AUR40520 Certificate IV in Vehicle Loss Assessing

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform a range of high-level evaluation and assessment functions in the vehicle loss assessing industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Those undertaking Certificate IV in Vehicle Loss Assessing must have completed one of the following automotive Certificate III qualifications or be able to demonstrate equivalent competency.

- AUR30320 Certificate III in Automotive Electrical Technology
- AUR30620 Certificate III in Light Vehicle Mechanical Technology
- AUR31120 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR32120 Certificate III in Automotive Body Repair Technology
- AUR32420 Certificate III in Automotive Refinishing Technology

Packaging Rules

Total number of units = 17

11 core units

6 elective units, of which:

- all **6** elective units may be from the elective units listed below
- up to **3** elective units may be from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

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Core Units

AURVLA001 Identify and report vehicle claim fraud indicators

AURVNA001 Provide vehicle loss assessments and identify repair requirements

AURVNA002 Provide vehicle total loss assessments

AURVNA003 Review vehicle repair quotations

AURVNA004 Apply insurance industry knowledge to vehicle loss assessments

AURVNA005 Inspect quality of vehicle repair work

AURVNA006 Identify and value vehicle salvage

AURVNA008 Apply automotive body and paint knowledge to vehicle loss assessments

AURVNA107 Apply automotive mechanical and electrical knowledge to vehicle loss assessments

AURVNN101 Evaluate vehicle bodywork for damage and identify repair requirements

AURVNP101 Evaluate vehicle paintwork for damage and identify refinish requirements

Elective Units

AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

AURAEA004 Manage environmental and sustainability best practice in an automotive workplace

AURAKA001 Use information technology systems

AURAMA005 Manage complex customer issues in an automotive workplace

AURVTA104 Inspect damaged vehicle systems and recommend repairs

BSBCUE405 Survey stakeholders to gather and record information

BSBLDR413 Lead effective workplace relationships

BSBPEF402 Develop personal work priorities

BSBSTR402 Implement continuous improvement

BSBTWK401 Build and maintain business relationships

BSBWHS311 Assist with maintaining workplace safety

FNSPIM410 Collect, assess and use information

Qualification Mapping Information

Supersedes and is equivalent to AUR40514 Certificate IV in Vehicle Loss Assessing.

Links

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AUR40620 Certificate IV in Automotive Electrical Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who work as master diagnostic technicians the automotive service and repair industry; servicing, diagnosing and repairing vehicle electrical systems and components. A range of advanced electrical diagnostic skills and knowledge is necessary, and leadership and supervision of others would be expected.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Those undertaking Certificate IV in Automotive Electrical Technology must have completed AUR30320 Certificate III in Automotive Electrical Technology or be able to demonstrate equivalent competency.

Packaging Rules

Total number of units = 10

1 core unit, plus

9 elective units, of which:

- all **9** units may be from the elective units listed below
- up to **3** units may be from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

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Specialisations

Any combination of elective units that meets the packaging rules above can be selected for the award of the *Certificate IV in Automotive Electrical Technology*. Where relevant, the choice of elective units set out in those packaging rules can serve to provide the qualification with one of the following specialisations. The rules to achieve a specialisation are detailed below.

The achievement of a specialisation will be identified on testamurs as follows:

- Certificate IV in Automotive Electrical Technology (Battery Electric Vehicle)
- Certificate IV in Automotive Electrical Technology (Hybrid Electric Vehicle).

Battery Electric Vehicle specialisation

Complete at least 6 units in Specialist Elective Unit Group A, noting the prerequisite unit requirements of some units in this stream.

Hybrid Electric Vehicle specialisation

Complete all units listed in Specialist Elective Unit Group B, noting the prerequisite unit requirements of some units in this stream.

Core Units

AURTTA021 Diagnose complex system faults

Specialist Elective Units

Group A: Battery electric vehicles

AURETH002 Service and maintain battery electric vehicles*

AURETH101 Depower and reinitialise battery electric vehicles

AURETH103 Diagnose and repair high voltage rechargeable energy storage systems in battery electric vehicles*

AURETH104 Diagnose and repair traction motor speed control systems in battery electric vehicles

AURETH105 Diagnose and repair high voltage traction motors in battery electric vehicles

AURETH106 Diagnose and repair auxiliary motors and associated components in battery electric vehicles*

AURETH107 Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles*

AURETH108 Diagnose and repair HVAC and rechargeable energy storage cooling systems in battery electric vehicle*

AURETH109 Diagnose and repair DC to DC converters in battery electric vehicles*

Group B: Hybrid electric vehicles

AURETH011 Depower and reinitialise hybrid electric vehicles

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AURETH012 Service and maintain electrical components in hybrid electric vehicles*

AURETH110 Diagnose and repair high voltage rechargeable energy storage systems in hybrid electric vehicles*

General Elective Units

AURAEA003 Monitor environmental and sustainability best practice in an automotive workplace

AURAFA007 Develop and document specifications and procedures

AURAFA106 Conduct research and present technical reports

AURAKA002 Adapt work processes to new technologies in an automotive workplace

AURANN011 Estimate and quote automotive body repairs

AURAQA002 Inspect technical quality of work in an automotive workplace

AURAQA003 Maintain quality processes in an automotive workplace

AURATA004 Provide technical guidance

AURATA005 Estimate and quote automotive mechanical and electrical repairs

AURETB101 Diagnose and repair electric braking systems

AURETH114 Diagnose complex faults in hybrid and battery electric vehicle network management systems

AURETR033 Develop and apply network electronic control system modifications

AURETR034 Develop and apply electrical system modifications

AURETR104 Diagnose complex faults in convenience and entertainment systems

AURETR125 Test, charge and replace batteries and jump-start vehicles

AURETR137 Diagnose complex faults in light vehicle safety systems

AURETR138 Diagnose complex faults in motorcycle electrical and electronic systems

AURETR139 Diagnose complex faults in light vehicle theft-deterrent systems

AURETR140 Diagnose complex faults in vehicle monitoring and protection systems

AURETU007 Overhaul air conditioning and HVAC system compressors

AURETU104 Diagnose and repair air conditioning and HVAC components

AURETU105 Retrofit automotive air conditioning and HVAC systems

AURETU106 Diagnose complex faults in air conditioning and HVAC systems

AURTNA001 Estimate and quote automotive vehicle or machinery modifications

AURTTA017 Carry out vehicle safety inspections

AURTTA126 Diagnose complex faults in electronic over hydraulic systems

AURTTE001 Apply knowledge of engine science

AURTTL010 Install LPG, CNG and LNG electrical control equipment

BSBHRM413 Support the learning and development of teams and individuals

BSBPEF301 Organise personal work priorities

BSBSTR401 Promote innovation in team environments

BSBWHS411 Implement and monitor WHS policies, procedures and programs

TAEDEL301 Provide work skill instruction

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TAEDEL404 Mentor in the workplace

*Note the following prerequisite unit requirements.

UNIT IN THIS QUALIFICATION	PREREQUISITE UNIT(S)
AURETH002 Service and maintain battery electric vehicles	AURETH001 Depower and reinitialise battery electric vehicles
AURETH012 Service and maintain electrical components in hybrid electric vehicles	AURETH011 Depower and reinitialise hybrid electric vehicles
AURETH103 Diagnose and repair high voltage rechargeable energy storage systems in battery electric vehicles	AURETH101 Depower and reinitialise battery electric vehicles
AURETH106 Diagnose and repair auxiliary motors and associated components in battery electric vehicles	AURETH101 Depower and reinitialise battery electric vehicles
AURETH107 Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles	AURETH101 Depower and reinitialise battery electric vehicles
AURETH108 Diagnose and repair HVAC and rechargeable energy storage cooling systems in battery electric vehicle	AURETH101 Depower and reinitialise battery electric vehicles
AURETH109 Diagnose and repair DC to DC converters in battery electric vehicles	AURETH101 Depower and reinitialise battery electric vehicles AURETR125 Test, charge and replace batteries and jump-start vehicles
AURETH110 Diagnose and repair high voltage rechargeable energy storage systems in hybrid electric vehicles	AURETR125 Test, charge and replace batteries and jump-start vehicles

Qualification Mapping Information

Supersedes and is equivalent to AUR40616 Certificate IV in Automotive Electrical Technology.

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AUR40720 Certificate IV in Automotive Body Repair Technology

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform as a team leader or workplace manager in the automotive body repair and refinishing sector. A wide range of technical skills, knowledge, leadership and supervision of others is expected.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Those undertaking Certificate IV in Automotive Body Repair Technology must have completed one of the following automotive Certificate III qualifications or be able to demonstrate equivalent competency.

- AUR32120 Certificate III in Automotive Body Repair Technology
- AUR32220 Certificate III in Automotive Glazing Technology
- AUR32320 Certificate III in Automotive and Marine Trimming Technology
- AUR32420 Certificate III in Automotive Refinishing Technology

Packaging Rules

Total number of units = 10

6 core units, plus

4 elective units, of which

- all **4** units may be from the elective units listed below
- up to **2** units may be from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

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Core Units

AURAEA003 Monitor environmental and sustainability best practice in an automotive workplace

AURAMA005 Manage complex customer issues in an automotive workplace

AURANN011 Estimate and quote automotive body repairs

AURVNA005 Inspect quality of vehicle repair work

AURVTN132 Inspect vehicle damage and determine repair procedures

AURVTN135 Apply original equipment manufacturer repair procedures during vehicle repairs

Elective Units

AUMAMM001 Influence and lead work groups in an automotive manufacturing workplace

AURETH011 Depower and reinitialise hybrid electric vehicles

AURETH101 Depower and reinitialise battery electric vehicles

AURVNA003 Review vehicle repair quotations

AURVNA008 Apply automotive body and paint knowledge to vehicle loss assessments

AURVNA107 Apply automotive mechanical and electrical knowledge to vehicle loss assessments

AURVNN101 Evaluate vehicle bodywork for damage and identify repair requirements

AURVNP101 Evaluate vehicle paintwork for damage and identify refinish requirements

AURVTA002 Remove and replace vehicle supplementary restraint systems

AURVTA104 Inspect damaged vehicle systems and recommend repairs

BSBINS309 Maintain business records

BSBLDR413 Lead effective workplace relationships

BSBTWK401 Build and maintain business relationships

BSBWHS411 Implement and monitor WHS policies, procedures and programs

MSS403086 Improve cost factors in work practices

TAEDEL404 Mentor in the workplace

TLIL4005 Apply conflict/grievance resolution strategies

Qualification Mapping Information

Supersedes and is equivalent to AUR40718 Certificate IV in Automotive Body Repair Technology.

Links

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AUR40820 Certificate IV in Automotive Mechanical Overhauling

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Qualification Description

This qualification reflects the role of individuals who perform advanced troubleshooting and repair tasks in the automotive retail, service and repair industry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Those undertaking Certificate IV in Automotive Mechanical Overhauling must have completed an automotive mechanical Certificate III qualification or be able to demonstrate equivalent competency.

Packaging Rules

Total number of units = 10

1 core unit, plus

9 elective units, of which:

- all **9** units may be from the elective units listed below
- up to **2** units may be from a Certificate III qualification or above in this Training Package or another endorsed Training Package or accredited course.

Elective units chosen must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, not duplicate the outcome of another unit chosen for the qualification, and contribute to a valid vocational outcome.

Core Units

AURTTA121 Diagnose complex system faults

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Elective Units

AURETR017 Overhaul charging system alternators
AURETR018 Overhaul starting system motors
AURETU007 Overhaul air conditioning and HVAC system compressors
AURHTB003 Overhaul hydraulic and air over hydraulic braking system components
AURHTB004 Overhaul air braking system components
AURHTD104 Carry out heavy vehicle wheel alignment operations
AURLTB001 Overhaul light vehicle braking system components
AURLTD106 Carry out light vehicle wheel alignment operations
AURMTA007 Conduct non-destructive testing
AURMTE101 Test engines using a dynamometer
AURPTE104 Overhaul outdoor power equipment engines
AURRTE011 Overhaul two and four-stroke cycle marine outboard engines
AURTTD005 Overhaul steering system components
AURTTE005 Overhaul engines
AURTTF003 Overhaul diesel fuel injection system components
AURTTF007 Overhaul carburettor fuel system components
AURTTM001 Operate and monitor computer numerical control machines
AURTTM002 Repair bearing tunnels and connecting rods in engines
AURTTM003 Apply metal to rebuild engine components
AURTTM004 Assemble engine blocks and sub-assemblies
AURTTM005 Balance rotating and reciprocating engine components
AURTTM006 Perform advanced machining and blueprinting of engine components
AURTTM007 Carry out crankshaft grinding
AURTTM008 Dismantle and evaluate engine blocks and sub-assemblies
AURTTM009 Fit sleeves and bore and hone engine cylinders
AURTTM010 Heat treat, straighten and reclaim engine components
AURTTM011 Recondition engine cylinder heads
AURTTQ004 Overhaul final drive assemblies
AURTTW003 Carry out machining operations
AURTTX007 Overhaul clutch assemblies
AURTTX008 Overhaul manual transmissions
AURTTX009 Overhaul automatic transmissions
AURTTX010 Overhaul hydrostatic transmissions

Qualification Mapping Information

Supersedes and is equivalent to AUR40816 Certificate IV in Automotive Mechanical Overhauling.

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AUR50116 Diploma of Automotive Management

Modification History

Release	Comment
Release 2	Removal of deleted imported units within elective bank.
Release 1	New qualifications.

Qualification Description

This qualification reflects the role of individuals who undertake leadership and management roles in the automotive industry. It is suitable for entry into senior management roles in all sectors of the automotive industry.

Entry Requirements

This qualification may be accessed by direct entry.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Packaging Rules

Total number of units = 12

6 core units, plus

6 elective units, of which:

- up to **6** units may be chosen from the Elective Units listed below
- up to **2** units may be chosen from a Certificate IV qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

Core Units

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Unit code	Unit title
AURAEA004	Manage environmental and sustainability best practice in an automotive workplace
AURAMA005	Manage complex customer issues in an automotive workplace
AURAMA006	Contribute to planning and implementing business improvement in an automotive workplace
BSBFIM501	Manage budgets and financial plans
BSBMGT502	Manage people performance
BSBWHS501	Ensure a safe workplace

Elective Units

Unit code	Unit title
AURAAA002	Determine retail rates for automotive products and services
BSBCUS501	Manage quality customer service
BSBFIA401	Prepare financial reports
BSBFRA403	Manage relationship with franchisor
BSBHRM405	Support the recruitment, selection and induction of staff
BSBHRM505	Manage remuneration and employee benefits
BSBINN502	Build and sustain an innovative work environment
BSBLED401	Develop teams and individuals
BSBMGT517	Manage operational plan
BSBMKG523	Design and develop an integrated marketing communication plan
BSBPUR402	Negotiate contracts
BSBWOR501	Manage personal work priorities and professional development
BSBWOR502	Lead and manage team effectiveness

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Unit code	Unit title
TLIA4005	Check and evaluate records and documentation
TLIA5058	Manage facility and inventory requirements

Qualification Mapping Information

Equivalent to AUR50112 Diploma of Automotive Management

Links

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AUR50216 Diploma of Automotive Technology

Modification History

Release	Comment
Release 3	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0. Release created to reflect updated units of competency.
Release 2	Update of imported unit in elective bank.
Release 1	New qualification.

Qualification Description

This qualification reflects the role of individuals who diagnose, analyse, evaluate, design and modify vehicle systems in the automotive retail, service and repair industry.

Entry Requirements

Those undertaking the Diploma of Automotive Technology must have completed an automotive Certificate IV qualification in one of the following disciplines, or be able to demonstrate equivalent competency.

- AUR40216 Certificate IV in Automotive Mechanical Diagnosis
- AUR40816 Certificate IV in Automotive Mechanical Overhauling

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Packaging Rules

Total number of units = 12

1 core unit, plus

11 elective units, of which:

- up to **11** units may be chosen from the Elective Units listed below

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- up to **2** units may be chosen from a Certificate IV qualification or above in this Training Package or another endorsed Training Package or accredited course, provided that the units chosen contribute to the vocational outcome of this qualification and do not duplicate the outcome of another unit chosen for the qualification.

Core Units

Unit code	Unit title
AURAFA007	Develop and document specifications and procedures

Elective Units

Unit code	Unit title
AURAFA006	Conduct research and present technical reports
AURETA001	Analyse and evaluate electrical and electronic faults in electronic over hydraulic systems
AURETA002	Analyse and evaluate electrical and electronic faults in body management systems
AURETA003	Analyse and evaluate electrical and electronic faults in monitoring and protection systems
AURETA004	Analyse and evaluate electrical and electronic faults in convenience and entertainment systems
AURETA005	Analyse and evaluate electrical and electronic faults in theft-deterrent systems
AURETA006	Analyse and evaluate electrical and electronic faults in air conditioning and HVAC systems
AURETB002	Analyse and evaluate electrical and electronic faults in dynamic control management systems
AURETE001	Analyse and evaluate electrical and electronic faults in engine management systems
AURETH013	Analyse and evaluate electrical and electronic faults in HEV and BEV management systems

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Unit code	Unit title
AURETR033	Develop and apply network electronic control system modifications
AURETR034	Develop and apply electrical system modifications
AURETX001	Analyse and evaluate electrical and electronic faults in driveline management systems
AURHTB005	Analyse and evaluate faults in heavy commercial vehicle braking systems
AURHTD005	Analyse and evaluate faults in heavy commercial vehicle steering and suspension systems
AURHTE004	Analyse and evaluate faults in heavy commercial vehicle engine and fuel systems
AURHTX005	Analyse and evaluate faults in heavy commercial vehicle transmission and driveline systems
AURJTA003	Analyse and evaluate faults in motorcycle engine and transmission systems
AURJTB002	Analyse and evaluate faults in motorcycle braking systems
AURJTD006	Analyse and evaluate faults in motorcycle steering, suspension and frame systems
AURJTR001	Analyse and evaluate faults in motorcycle electrical and electronic systems
AURKTA006	Analyse and evaluate faults in track type mobile plant transmission, steering and braking systems
AURKTA007	Analyse and evaluate faults in mobile plant hydraulic systems
AURKTB002	Analyse and evaluate faults in wheeled mobile plant braking systems
AURKTD003	Analyse and evaluate faults in wheeled mobile plant steering and suspension systems
AURKTD004	Analyse and evaluate faults in track type mobile plant undercarriage and suspension systems
AURKTE001	Analyse and evaluate faults in mobile plant engine and fuel systems
AURKTX002	Analyse and evaluate faults in wheeled mobile plant transmission and driveline systems

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Unit code	Unit title
AURLTB002	Analyse and evaluate faults in light vehicle braking systems
AURLTD007	Analyse and evaluate faults in light vehicle steering and suspension systems
AURLTE003	Analyse and evaluate faults in light vehicle engine and fuel systems
AURLTQ003	Analyse and evaluate faults in light vehicle transmission and driveline systems
AURRTA007	Analyse and evaluate faults in light marine hydraulic systems
AURRTA008	Analyse and evaluate faults in light marine hull performance and stability systems
AURRTE012	Analyse and evaluate faults in light marine engine and powerhead systems
AURRTX005	Analyse and evaluate faults in light marine transmission systems
AURTNA001	Estimate and quote automotive vehicle or machinery modifications
AURTTA022	Develop and apply mechanical system modifications
AURTTA023	Develop and apply hydraulic system modifications
AURTTA024	Develop and apply pneumatic system modifications
AURTTL014	Analyse and evaluate faults in gas fuel systems
AURTTL015	Develop and apply gas fuel system modifications
AURVTN134	Evaluate vehicle body repair materials, equipment and work processes
MSMENV472	Implement and monitor environmentally sustainable work practices
MSMENV672	Develop workplace policy and procedures for environmental sustainability

Qualification Mapping Information

Equivalent to AUR50212 Diploma of Automotive Technology

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AURACA101 Respond to customer needs and enquiries in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to identify customer needs and enquiries and provide effective information and advice when supplying automotive products and services.

The unit applies to those working in an automotive workplace.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Common Sales and Marketing

Elements and Performance Criteria

ELEMENTS *Elements describe the essential outcomes.*	**PERFORMANCE CRITERIA** *Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify customer need or enquiry regarding product or service	1.1 Greet customer according to workplace procedures and customer service standards 1.2 Identify and clarify customer requirement relating to specific product or service 1.3 Provide referrals to personnel where customer need or enquiry is outside scope of own responsibility or authority in line with workplace procedures
2. Provide information and advice to customer	2.1 Provide information that addresses customer need or enquiry in a timely, efficient and courteous manner to build a positive relationship and customer loyalty 2.2 Ask questions to confirm that information satisfies customer

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	need or enquiry 2.3 Identify outstanding customer requirements and address promptly in a courteous and discreet manner, or refer to personnel in line with workplace procedures
3. Finalise customer contact	3.1 Seek customer feedback about product or service and record as required according to workplace procedures 3.2 Complete follow-up action effectively according to workplace procedures and timeframes 3.3 Address customer complaints or dissatisfaction or escalate to personnel according to workplace procedures 3.4 Conclude interaction with customer in line with workplace procedures and customer service standards

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Speaks clearly to be understood, using required automotive workplace terms • Uses required visual gestures to assist customer understanding • Listens effectively, giving feedback to customer to confirm clear understanding.
Writing	• Fills out workplace documentation legibly • Provides information or records customer requirements in relevant forms or documentation.
Planning and organising	• Sets and monitors timeframes or schedules relating to customer service.
Problem solving	• Identifies own role and responsibilities in the workplace • Follows workplace procedures for responding to customer enquiries.
Technology	• Operates telephone systems and other communication equipment • Operates computer systems.

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Unit Mapping Information

Supersedes and is equivalent to AURACA001 Respond to customer needs and enquiries in an automotive workplace.

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Assessment Requirements for AURACA101 Respond to customer needs and enquiries in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify needs or enquiries of at least three different customers with different requirements, including at least one dissatisfied customer
- provide advice or information on automotive products and services to the above three customers.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to respond to customer needs and enquiries in an automotive workplace, including:
  - information provided by customer and supervisors
  - workplace procedures required to respond to customer needs and enquiries in an automotive workplace, including:
    - documentation procedures
  - housekeeping procedures techniques for assisting customers, including:
    - effective questioning, including open and closed
    - active listening
    - building rapport
    - explaining clear options
    - making recommendations
    - finalising contact
    - storage of personal information
- customer service standards and practices relevant to automotive workplaces, including:
  - greeting and farewelling customers

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    - providing features and benefits of workplace product or service using clear, jargon-free language
    - discussing alternative products or services where required
    - recommending products or services suitable to customer requirements
    - recording customer requirements and enquiries
    - customer service delivery standards
    - contact and follow-up procedures
- indicators of customer dissatisfaction, including verbal and non-verbal cues
- techniques for resolving customer problems, including procedures for complaint escalation
- key legal requirements relating to customer rights as a consumer, and business obligations under Australian Consumer Law (ACL)
- procedures for making referrals relating to:
    - customer dissatisfaction
    - suppliers of other products and services
- key features and benefits of workplace-specific products and services
- techniques for undertaking basic calculations to provide information to customers relating to quantities, timeframes, and delivery of automotive products and services.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having responded to customer needs and enquiries, e.g. complaints register.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following must be made available:

- automotive workplace or simulated workplace
- three different customers with different requirements, including one dissatisfied customer.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURACA102 Manage complex customer requirements in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to manage and assist customers with complex automotive industry product or service requirements. It involves confirming customer needs, suggesting options and providing costs, and determining a course of action for customers with complex requirements.

The unit applies to those in customer service sales and administrative roles in an automotive workplace.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Common Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm customer requirements	1.1 Use collaborative techniques, including active listening and questioning, to elicit, clarify and confirm customer requirements 1.2 Document customer requirements clearly and legibly according to workplace procedures and organisational legal requirements 1.3 Obtain customer acknowledgement and confirmation of the documented requirements
2. Advise customer of	2.1 Generate viable options in response to customer needs and

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ELEMENTS	PERFORMANCE CRITERIA
available options	workplace legal requirements according to workplace procedures 2.2 Research further information as required to confirm or clarify options 2.3 Explain and discuss options with customer to assist informed decision making 2.4 Provide supporting information as required to assist customer understanding 2.5 Communicate sales or service conditions verbally or through written correspondence according to workplace procedures
3. Agree action plan with customer	3.1 Detail and document customer's preferred option in action plan 3.2 Gain customer commitment to agreed action plan according to workplace procedures 3.3 Provide assistance in completing relevant documentation to customers as required 3.4 Seek customer feedback on services provided

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Uses customer feedback and experience to inform future options and customer dealings.
Numeracy	• Uses mathematical operations, including addition, subtraction, multiplication, division, and percentages, to determine price and timeframes suitable to customer options.
Oral communication	• Summarises and presents key information in presenting options to customers • Relates to people from diverse backgrounds using clear language and tone, and unambiguous terminology.
Reading	• Interprets sales or service conditions relating to workplace products and services • Identifies and reviews information about product and service options that meet customer needs.
Planning and organising	• Uses a planned approach to sequence and schedule customer requirements in the action plan.

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SKILL	DESCRIPTION
Problem solving	• Develops solutions unique to a customer and their issue • Uses conflict resolution techniques to avoid escalation of issues.
Technology	• Uses general office equipment • Uses digital systems and tools.

Unit Mapping Information

Supersedes and is equivalent to AURACA002 Manage complex customer requirements in an automotive workplace.

Links

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Assessment Requirements for AURACA102 Manage complex customer requirements in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop an action plan for at least three different customers with different complex requirements relating to automotive products or services, which must include:
  - costing details
  - quotation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- negotiation, communication and problem-solving techniques, including:
  - active listening
  - questioning techniques
  - interpreting body language
  - negotiating or closing a deal
- types of complex customer requirements relating to:
  - cost requirements
  - warranty requirements
  - customised, bespoke, or unusual requirements
  - special timeframes
  - availability of parts or components
  - requirements of special or important customers
  - complex technical problems
  - matters involving more than one solution or area of service
  - needs of customers dissatisfied with previously provided product or service
  - complex financial or insurance arrangements

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- key legal requirements relating to customer rights as a consumer, and business obligations under Australian Consumer Law (ACL), including:
  - anti-discrimination
  - equal opportunity
  - privacy and confidentiality
  - consumer protection and rights
  - freedom of information
- industry codes of practice and ethical principles, including duty of care and consumer access to appeal processes
- parameters to consider in viable options for customer needs, including:
  - benefits
  - timeframes
  - approximate costs
- requirements in a document action plan, including:
  - agreed delivery timeframe
  - agreed cost
- workplace policies and procedures relating to:
  - customer service
  - feedback and complaints handling
  - quality requirements
  - documentation and recording procedures
  - digital security and record keeping
- detailed automotive product and service knowledge relevant to workplace, manufacturers or suppliers
- methods to locate and interpret information required to manage complex customer requirements in an automotive workplace, including:
  - information provided by customer
  - manufacturer and supplier specifications and procedures or equivalent documentation
  - internet and social media
  - workplace procedures
- workplace procedures required to manage complex customer requirements in an automotive workplace, including:
  - documentation procedures
  - housekeeping procedures.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having managed complex customer issues in an automotive workplace, e.g. complaints register.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace procedures relating to customer service
- three different customers with different complex requirements
- commercially realistic workplace with manufacturer and/or supplier product or service information
- computer hardware and software and general office equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURACA103 Build customer relations in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to maintain a customer database, monitor existing customer service processes and operations, and identify opportunities to value add to customer experiences in an automotive workplace.

The unit applies to those working in the automotive vehicle or component sales and service environment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Common Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Maintain customer database	1.1 Upload information relating to new customers regularly to database according to workplace procedures 1.2 Update information relating to existing customers regularly to maintain relevance and currency of database 1.3 Access and analyse information relating to customers and their sales and service history
2. Determine customer value-adding opportunities	2.1 Monitor customer needs and value-adding opportunities regularly via information accessible on the company database and through informal channels 2.2 Assess current automotive products and services against

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ELEMENTS	PERFORMANCE CRITERIA
	customer needs 2.3 Document and report trends in customer service needs and value-adding opportunities to supervisor
3. Contribute to workplace business operations	3.1 Review customer service operations with supervisor to check alignment with current customer service requirements 3.2 Make recommendations for changes to customer service operations following consultation with supervisor

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets textual and numerical information in automotive product and service documentation.
Writing	• Structures customer service reports logically using required data and effective spelling and grammar.
Oral communication	• Explains clearly customer needs and product and service information.
Numeracy	• Interprets numerical information relating to percentages and trends over time in workplace databases, charts and documentation.
Problem solving	• Interprets information and recommends improvements to customer service.
Technology	• Operates workplace business technology records customer feedback and profile in a logical sequence within workplace database.

Unit Mapping Information

Supersedes and is equivalent to AURACA003 Build customer relations in an automotive workplace.

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Links

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Assessment Requirements for AURACA103 Build customer relations in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- update and maintain a customer database according to workplace procedures
- provide a report that shows evidence of monitoring and reviewing information relating to customer needs and value-adding opportunities
- provide evidence of conducting one of the following activities to address customer service standards and requirements:
  - staff or team meeting
  - staff or team training session
  - staff or team information session
  - staff or team member feedback or review.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to build customer relations in an automotive workplace, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to build customer relations in an automotive workplace, including:
  - documentation procedures
- procedures for using workplace databases, including:
  - accessing database and entering data
  - developing and maintaining customer profiles
  - retrieving data
  - analysing data, including basic statistical processes, including mean, median and mode

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    - presenting data, including tables and graphs
- customer service principles and practices relevant to automotive workplaces, including:
    - recording customer requirements and enquiries
    - contact and follow-up procedures
    - feedback and complaints handling, including feedback surveys
- techniques for value adding to customer services, including creating positive consumer experiences through customer-centred approaches
- procedures for comparing actual customer service operations against expected operations.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to customer relationship building activities in an automotive workplace, e.g. customer feedback surveys.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources should be made available:

- automotive workplace or simulated workplace
- office equipment, computer and database software
- customer database containing customer information and data
- workplace procedures relating to customer service and use of database.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAFA103 Communicate effectively in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to communicate in an automotive workplace. It involves communicating effectively by conveying and receiving information using verbal and non-verbal techniques and correct automotive technical terminology.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Common Foundation Skills

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to communicate	1.1 Establish purpose of communication and identify required information 1.2 Interpret and examine non-verbal information, as required 1.3 Choose communication method to suit audience and purpose 1.4 Prepare relevant information and prioritise in a logical manner
2. Participate in routine verbal communication	2.1 Verbally exchange information using language, tone and pace suited to audience and purpose 2.2 Use automotive terminology, including vehicle and component descriptions, accurately and according to industry

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ELEMENTS	PERFORMANCE CRITERIA
	conventions 2.3 Conduct verbal exchanges with others in a courteous and professional manner, according to workplace communication protocols. 2.4 Use active listening and questioning techniques to clarify and confirm understanding 2.5 Clearly express own opinions and listen to the opinions of others without interruption
3. Carry out routine communications	3.1 Use written and other non-verbal communication techniques to convey accurate and factual information according to workplace communication protocols. 3.2 Clarify intended meaning with recipients 3.3 Use workplace communication devices required for the task according to equipment specifications and workplace procedures
4. Contribute to workplace communication	4.1 Respond to requests for information from colleagues in a timely manner 4.2 Contribute to work group activities and meetings 4.3 Clarify instructions from supervisor or colleagues 4.4 Seek feedback from supervisor or colleagues and incorporate into own communication

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets instructions and requirements in written automotive workplace material.

Digital literacy	• Uses digital systems and tools to:
	  • communicate with others
	  • access, extract, organise and present information.

Unit Mapping Information

Supersedes and is equivalent to AURAFA003 Communicate effectively in an automotive workplace.

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Links

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Assessment Requirements for AURAFA103 Communicate effectively in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- exchange verbal information regarding work task with colleague
- exchange verbal information regarding work task with supervisor
- request verbal clarification of work task from supervisor
- request information from external customer using the telephone
- request information from external customer using email.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- common automotive technical terms and their application to an automotive workplace
- active listening and questioning techniques
- verbal communication techniques, including:
  - one-on-one
  - group and team interactions
- collaborative and inclusive techniques for interacting with others, including techniques appropriate to differing ages, cultural backgrounds and special needs
- workplace forms and documents in electronic or hard copy, including:
  - workplace instructions or work orders
  - manufacturer service, repair and equipment manuals
- types of non-verbal communication techniques, including:
  - visual gestures and sign language
  - body language
  - signage
- workplace procedures and requirements relating to:

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  - workplace document style, format and layout
  - use of communication systems, including email, telephone, intercom and social media
  - reporting
- types of communication devices in automotive workplaces
- operating features of communication devices, including:
  - computers and tablets with email
  - intercoms and two-way radios
  - telephone systems, including mobile phones.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having communicated effectively in the automotive workplace, e.g. emails, text messages, or written documentation of conversations.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- supervisor, colleagues and customers with whom to communicate in verbal and written exchanges
- workplace communication devices, including a telephone system and computer.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAFA104 Resolve routine problems in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to identify and resolve routine basic problems commonly encountered in an automotive workplace. It involves developing and implementing solutions to identified problems and reporting on their effectiveness.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Common Foundation Skills

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify the problem	1.1 Identify early indicators of problems according to workplace procedures 1.2 Confirm existence of problem according to workplace procedures 1.3 Identify information regarding problem according to workplace procedures
2. Develop, implement and evaluate solution	2.1 Identify a range of possible methods for resolving the problem according to workplace procedures 2.2 Analyse strengths and weaknesses of each option 2.3 Identify and implement optimal solution according to

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ELEMENTS	PERFORMANCE CRITERIA
	workplace procedures 2.4 Compare effectiveness of chosen solution against other identified options
3. Assist others to identify and resolve problems	3.1 Provide assistance to help others identify routine problems according to workplace procedures 3.2 Discuss problems and potential solutions with others 3.3 Use information gathered through discussion to help resolve problems.

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Reviews own skills required to perform routine problem solving • Identifies learning opportunities to gain skills required to solve routine problems. • Reflects on actions and outcomes during routine problem-solving activities, recognising and correcting errors • Draws on knowledge to identify routine problems and potential solutions.
Reading	• Selects and applies workplace procedures and other written documentation found in the automotive workplace to solve routine problems.
Oral communication	• Speaks clearly to be understood and uses automotive workplace terms • Uses non-verbal feedback to support effective communication • Listens to others and gives feedback to the sender to confirm clear understanding.
Teamwork	• Applies knowledge of own role to effectively support team activities and tasks.

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Unit Mapping Information

Supersedes and is equivalent to AURAFA004 Resolve routine problems in an automotive workplace.

Links

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Assessment Requirements for AURAFA104 Resolve routine problems in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and resolve at least three routine problems in an automotive workplace, each caused by a different one of the following causes:
  - inaccurate or outdated workplace procedure
  - internal changes to work conditions or environment
  - external changes to work conditions or environment
  - additional or non-standard work activities.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- workplace procedures relating to routine problem identification and resolution strategies
- problem solving methods and techniques, including:
  - brainstorming
  - root cause analysis
  - trial and error approach
  - problem cause and effect strategies.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having solved routine basic problems in their automotive workplace, e.g. workplace memos.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace procedures relating to employee participation in problem solving activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURAFA105 Write routine texts in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to complete standard automotive industry forms that accurately convey meaning and information.

The unit applies to those working in the automotive service and repair industry. The unit includes routine workplace texts for different purposes, including industry-related forms.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Common Foundation Skills

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to complete routine automotive workplace text	1.1 Identify purpose and audience for routine automotive text 1.2 Identify and confirm due date, relevant organisation, and method of lodgement with supervisor 1.3 Gather information required to complete the text according to workplace procedures
2. Finalise draft of written text	2.1 Draft text according to workplace procedures 2.2 Clarify queries or concerns about information required in the text with required internal or external personnel 2.3 Review text for accuracy and meaning 2.4 Collect and attach supporting documentation or information according to workplace procedures 2.5 Obtain signatory requirements according to workplace

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ELEMENTS	PERFORMANCE CRITERIA
	procedures
3. Submit text	3.1 Lodge routine text, supporting documentation, and any required payment according to workplace procedures 3.2 Verify receipt of text according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets and applies workplace procedures • Interprets technical information and instructions to determine requirements for written text.
Writing	• Spells with reasonable accuracy • Constructs text with reasonable accuracy of grammatical structure and punctuation • Writes text legibly using required automotive terminology.
Numeracy	• Interprets numerical information and records it accurately in documentation.
Digital literacy	• Uses digital systems and tools to access, filter, extract, organise and submit written text.
Self-management	• Sequences task and follows workplace procedures for preparing and lodging written text.
Technology	• Uses office equipment to lodge forms and copy or send written texts.

Unit Mapping Information

Supersedes and is equivalent to AURAFA005 Write routine texts in an automotive workplace.

Links

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Assessment Requirements for AURAFA105 Write routine texts in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- write at least two short routine texts used in an automotive workplace for different audiences and purposes
- complete and lodge at least one industry form with an external organisation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic principles of effective written communication, including:
  - differences between requirements for written as opposed to spoken English
  - purposes of written communication used in automotive workplaces
  - features of routine formal and informal workplace texts, including layout
  - writing strategies to complete routine workplace texts, including planning, drafting and reviewing
  - grammar and vocabulary sufficient to complete routine workplace texts legibly
  - writing conventions for routine workplace texts and forms
- workplace procedures or style guides for preparing written texts, including:
  - protocols relating to workplace documentation, including emails and memos
  - workplace sign-off and approval processes relating to written texts
- types, uses and layouts of industry forms, including:
  - forms from licensing and regulatory organisations
  - workplace-specific forms, including:
    - leave application forms
    - requisitions
    - time cards

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- electronic and manual lodgement processes.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having written a range of routine texts in an automotive workplace, e.g. workplace-specific documents and forms that they have completed.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace-specific documents that can be completed
- writing equipment and materials
- office equipment and communication devices
- dictionaries or written language aids.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAFA106 Conduct research and present technical reports

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to research technical subject matter and prepare and present a technical report of findings. It involves identifying and analysing research requirements, planning and conducting research, evaluating findings, and developing and presenting the technical report.

The unit applies to those working in the automotive service and repair industry at a specialist technician or manager level.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Common Foundation Skills

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine research requirements	1.1 Define and confirm research purpose, objectives, limits, and timeframe 1.2 Prepare research outline according to research requirements and confirm with key stakeholders
2. Plan research	2.1 Develop systematic methodology for information collection 2.2 Identify, access and evaluate sources of research information according to research requirements 2.3 Develop research strategy, including data gathering and analysis methodologies according to research requirements 2.4 Identify and obtain resources required to support research

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ELEMENTS	PERFORMANCE CRITERIA
	activities
3. Conduct research	3.1 Carry out research according to established purpose, process and objectives 3.2 Collect and manipulate research data according to research requirements 3.3 Store research data for future reference according to workplace procedures
4. Analyse research information	4.1 Prepare research data for analysis 4.2 Analyse data according to workplace procedures 4.3 Draw and document conclusions, findings and recommendations from data analysis according to workplace procedures
5. Prepare and present research report	5.1 Prepare technical report and presentation materials according to report requirements and workplace standards 5.2 Present report according to workplace procedures 5.3 Store report and supporting resources according to information management protocols and workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates and analyses a range of technical information and documents relevant to work activities • Develops strategies to research and write technical reports.
Reading	• Interprets technical information, instructions and requirements • Interprets graphical illustrations, technical information and terminology in manuals and textbooks.
Writing	• Communicates ideas and information using relevant automotive terminology • Prepares and presents textual and numerical information in technical reports.
Numeracy	• Collects and analyses quantitative data • Calculates mean, mode, median and percentages.

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SKILL	DESCRIPTION
Oral communication	• Clarifies and confirms report requirements, including target audience.
Organisation	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses workplace technology to access technical documents, including computerised technology.

Unit Mapping Information

Supersedes and is equivalent to AURAFA006 Conduct research and prepare technical reports.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAFA106 Conduct research and present technical reports

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- research and prepare at least two different technical reports, in which the work must involve:
  - accessing and interpreting relevant automotive technical information
  - developing a research outline
  - undertaking detailed research of the subject area
  - analysing data
  - developing conclusions, findings and recommendations
  - presenting reports to intended target audience.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- workplace policies and procedures relating to the research and presentation of technical reports, including:
  - agreed quality standards
  - information entry, management and storage
  - use of specialist or management summaries
  - compliance with protocols, conventions and legal requirements relating to acknowledgements and intellectual property
- research methods, including:
  - qualitative, including:
    - participant observations
    - interviews
    - focus groups

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    - desktop research
  - quantitative, including:
    - questionnaires
    - laboratory experiments
- procedures for undertaking research, including:
  - planning the research, including:
    - identifying the problem
    - defining purpose and limits of the research
    - developing a research outline
    - sourcing information
  - designing the research, including:
    - methodology
    - data gathering
    - data analysis
    - conducting pilot studies
  - conducting the research, including data gathering and common testing procedures
  - drawing conclusions from data analysis, including findings and proposed actions or recommendations
- preparing and presenting a technical report, including:
  - writing for a specific purpose
  - writing for a specific audience
  - using pictures and diagrams
  - using style guides.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to researching, preparing and presenting technical reports in the automotive workplace, e.g. technical reports and presentation notes.

Assessment must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- situations requiring research activities and technical report writing
- range of reference materials relevant to technical research activities
- commercially realistic number of co-workers to which the technical report may be presented.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURAFA108 Interpret and apply automotive repair instructions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to source, interpret and apply repair requirements from automotive workplace instructions and work orders. It involves following worksheets and work orders when conducting vehicle repairs.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Common Foundation Skills

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop work plan for repair	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret repair information, including workplace and manufacturer procedures and specifications 1.3 Identify recommended repair procedures and prepare work plan according to workplace and manufacturer procedures and specifications

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ELEMENTS	PERFORMANCE CRITERIA
2. Initiate repairs	2.1 Identify tools and equipment required for servicing activity and establish serviceability according to workplace procedures 2.2 Carry out repairs according to workplace and manufacturer procedures and specifications and workplace health and safety and environmental requirements 2.3 Report additional required work identified during repair process to supervisor and document according to workplace procedures
3. Complete work processes	3.1 Inspect completed work according to workplace procedures and manufacturer specifications 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates a range of technical information required to conduct repair.
Reading	• Accesses and interprets technical information and diagrammatic representations in written repair instructions and recommended repair procedures.
Oral communication	• Participates in verbal exchanges using active listening and questioning to clarify and confirm repair instructions.
Numeracy	• Uses mathematical operations, including addition, subtraction, multiplication and division, to calculate manufacturers repair measurements and calibrations.
Planning and organising	• Plans and sequence order of repair work • Prepares work area and select equipment and materials prior to commencing repair work.
Technology	• Uses workplace and specialist repair tools, equipment and measuring devices.

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Unit Mapping Information

Supersedes and is equivalent to AURAFA008 Interpret and apply automotive repair instructions.

Links

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Assessment Requirements for AURAFA108 Interpret and apply automotive repair instructions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- interpret at least three different sets of work orders for different types of automotive repairs and for each work order:
  - prepare a work plan
  - follow the prepared work plan and
  - recommend automotive repair procedures when carrying out the repair work.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- workplace health and safety (WHS) requirements, including procedures for working safely with system being repaired
- automotive vehicle and repair terminology
- symbols, codes, legends and diagrammatic representations included in workplace manuals and recommended repair specifications
- repair work planning processes, including:
  - planning and sequencing tasks
  - preparing work area and selecting tools, materials and equipment
  - checking work against instructions and recommended repair specifications
- methods to locate recommended repair specifications, including:
  - original equipment manufacturer (OEM) specifications and procedures authorised agency requirements
  - use of specialist equipment
- automotive workplace repair procedures relating to:
  - quality and continuous improvement processes
  - workplace instructions and work orders

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- equipment use, maintenance and storage
- environmental management, including waste disposal, recycling and reuse guidelines.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having applied automotive repair instructions in the workplace, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- OEM or authorised agency's recommended repair procedures
- repair instructions and work orders
- three different vehicles with repair requirements matched to work orders
- tools and equipment relating to automotive repairs
- workplace procedures relating to repair instructions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAFA110 Identify routine problems in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to identify routine basic problems commonly encountered in an automotive workplace. It involves identifying problems and proposing solutions to those problems.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Common Foundation Skills

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify the problem	1.1 Identify early indicators of problems according to workplace procedures 1.2 Verify existence of problem according to workplace procedures 1.3 Gather information regarding problem according to workplace procedures
2. Develop, evaluate and communicate solution	2.1 Identify a range of possible methods for resolving the problem according to workplace procedures 2.2 Identify strengths and weaknesses of each option 2.3 Identify optimal solution according to workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
	2.4 Communicate optimal solution to workplace personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Reviews own skills required to perform routine problem solving • Identifies learning opportunities to gain skills required to solve routine problems • Reflects on actions and outcomes during routine problem-solving activities, recognising and correcting errors • Draws on prior knowledge to identify routine problems and potential solutions.
Reading	• Selects and applies workplace procedures and other written documentation found in the automotive workplace to identify routine problems and propose solutions.
Writing	• Completes workplace documentation, such as quality control sheets and graphs, problem solving checklists and reports.
Oral communication	• Speaks clearly to be understood • Speaks using automotive workplace terms • Uses non-verbal feedback to support effective communication • Listens to others and give feedback to the sender to confirm clear understanding.
Teamwork	• Applies knowledge of own role to effectively support team activities and tasks.

Unit Mapping Information

New unit.

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Links

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Assessment Requirements for AURAFA110 Identify routine problems in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify at least three routine problems in an automotive workplace caused by one of the following:
  - inaccurate or outdated workplace procedure
  - internal changes to work conditions or environment
  - external changes to work conditions or environment
  - additional or non-standard work activities.
- in the course of the above work, identify at least one spillage or leakage.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- workplace procedures relating to problem identification and resolution strategies
- problem solving methods and techniques, including:
  - brainstorming
  - root cause analysis
  - trial and error approach
  - problem cause and effect strategies
- workplace reporting procedures.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having identified routine problems in an automotive workplace, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace procedures relating to problem identification and resolution strategies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAMA102 Communicate business information in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes skills and knowledge required to communicate business information effectively in verbal and written forms and through participating in meetings and presentations. It involves reaching agreement on work-related issues and formally communicating specific business information on a day-to-day basis using a range of communication devices and methods.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Common Management, Leadership and Supervision

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Communicate information verbally	1.1 Determine purpose of verbal communication and choose communication style to suit audience requirements and purpose 1.2 Deliver information verbally using clear, succinct and unambiguous language and required industry terminology 1.3 Question listeners to verify that information provided has been received and understood as required 1.4 Provide clarification, rephrasing or additional explanations as required 1.5 Listen to verbal information received from others carefully,

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ELEMENTS	PERFORMANCE CRITERIA
	and clarify and confirm with the speaker as required
2. Communicate information in writing	2.1 Determine purpose or objectives of written communication and choose communication style to suit audience and purpose 2.2 Draft written text using required vocabulary, grammatical structures and conventions 2.3 Structure text logically, format and present following workplace procedures 2.4 Check text to confirm that key messages are clear, succinct and unambiguous and meet intended purpose 2.5 Read written information received from others carefully and clarify information as required
3. Communicate in meeting	3.1 Identify purpose of meeting and clarify as required 3.2 Attend meeting and make positive contribution to outcomes according to workplace meeting procedures and own level of responsibility 3.3 Carry out own responsibilities relating to meeting outcomes according to workplace meeting procedures
4. Present information to others	4.1 Identify and clarify purpose for presenting information to others and features of the target audience 4.2 Plan information to be presented and organise logically 4.3 Identify and select resources needed to present information 4.4 Check resources prior to presenting information to ensure that they are functioning properly 4.5 Conduct presentation as planned and provide required responses to audience questions and feedback 4.6 Review audience feedback on presentation to improve future practice
5. Discuss and resolve a workplace issue	5.1 Analyse key factors and issues relating to a workplace issue 5.2 Plan key discussion points and suitable approach to discussion 5.3 Conduct discussion according to planned approach with solutions or outcomes acceptable to both parties negotiated and agreed 5.4 Carry out required follow-up action according to workplace procedures and further discussions with other parties conducted as required 5.5 Document solutions or outcomes according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets and conveys numerical information in verbal information and written texts.
Teamwork	• Works with others and in a team by using collaborative communication techniques.
Planning and organising	• Sequences and structures information to convey to others in a clear and logical manner.
Technology	• Operates equipment and technology • Uses digital systems and tools.

Unit Mapping Information

Supersedes and is equivalent to AURAMA002 Communicate business information in an automotive workplace.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAMA102 Communicate business information in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- receive and respond to at least one piece of verbal communication relating to the automotive workplace that includes asking questions and providing responses
- receive and respond to at least one piece of written communication relating to the automotive workplace
- participate in at least one workplace meeting relating to the automotive workplace that includes asking questions and providing responses
- prepare and make at least one presentation of information relating to the automotive workplace
- prepare for and participate in at least one discussion to resolve a workplace issue and document the outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information to be communicated in an automotive workplace, including:
  - information provided by customer and supervisor
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to communicate business information in an automotive workplace, including:
  - documentation procedures
- automotive industry technical terms and their application to an automotive workplace
- use of communication systems, including email, telephone, intercom and social media
- procedures for communicating verbally, including:
  - active listening and questioning techniques

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    - creating clear, succinct and unambiguous language
    - clarifying meaning
    - choosing language to suit audience
- procedures for communicating in writing, including:
    - accessing and interpreting key concepts of written material
    - organising responses to address questions and according to communication medium
    - creating draft documents, including structure and formatting
    - editing documents
- procedures for participating in meetings, including:
    - accessing and reviewing previous meeting minutes and agendas
    - contributing to meeting outcomes
    - determining own role in meeting outcomes
- procedures for presenting information, including:
    - determining target audience
    - determining presentation format, including choosing equipment and materials
    - delivering a presentation
- procedures for negotiating between parties, including:
    - determining key factors of issues
    - planning discussions
    - conducting discussions, including:
        - establishing rapport
        - acknowledging disagreements and the views of others
        - dealing constructively with differences
        - staying focused
        - making a strong case without overselling or becoming personal or aggressive
        - compromising to achieve realistic and achievable outcomes.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having communicated business information in an automotive workplace, e.g. emails, meeting minutes, or presentation slides.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- commercially realistic range of internal and external customers with whom to communicate
- written communication from internal or external customers
- meetings to attend, including meeting agendas and previous minutes
- equipment and materials appropriate for workplace presentations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURASA102 Follow safe working practices in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to identify and follow safety and emergency procedures in an automotive workplace. It involves safety procedures to be followed when using workplace hand tools and hand-held power tools, fixed equipment, and chemicals, and when running vehicles and machinery. It includes the individual's responsibility for safety and emergency response in the event of an accident or incident.

The unit applies to those who work on agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, motorcycles, mobile plant machinery or outdoor power equipment in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Common - Health and Safety

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and follow workplace safety procedures	1.1 Identify workplace procedures relating to personal safety 1.2 Identify and report unsafe situations and hazards according to workplace procedures 1.3 Identify and report machinery and equipment breakdowns according to workplace procedures 1.4 Identify and report fire hazards according to workplace procedures and taking the required precautions

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Identify and follow workplace procedures and safety requirements for handling and storing dangerous goods and hazardous substances 1.6 Identify and follow workplace manual handling procedures 1.7 Participate in workplace health and safety (WHS) consultative arrangements established by workplace
2. Identify and follow workplace emergency procedures	2.1 Identify and follow workplace emergency procedures regarding illness and accidents 2.2 Identify and follow safety warning alarms and workplace evacuation procedures 2.3 Identify and locate firefighting appliances and equipment for emergency use and application 2.4 Identify and contact qualified persons in the event of an incident, accident or sickness of self, co-workers, staff, customers and others 2.5 Complete accident and incident documentation requirements are according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets information from manufacturer and workshop literature when seeking procedures required to carry out work safely
Oral communication	• Clarifies instructions • Informs personnel of workplace hazards
Numeracy	• Identifies hazardous material weights and volumes according to safety data sheets (SDS) and work instructions
Planning and organising	• Plans own work requirements to achieve required outcomes while working according to safety requirements
Self-management	• Identifies and look after own safety
Problem solving	• Recognises when unsure of safety procedures and seek help

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Unit Mapping Information

Supersedes and is equivalent to AURASA002 Follow safe working practices in an automotive workplace.

Links

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Assessment Requirements for AURASA102 Follow safe working practices in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- move two heavy items in an automotive workplace, safely
- safely use two different dangerous goods in an automotive workplace
- identify fire safety equipment and its application in an automotive workplace
- identify emergency evacuation procedures and responsibilities of self and co-workers in an automotive workplace
- raise one safety concern at a workplace health and safety (WHS) consultative meeting
- carry out one hazard inspection in an automotive workplace
- complete one incident report.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic aspects of relevant state or territory workplace health and safety (WHS) legislation, including:
  - employer responsibilities for workplace practices
  - employee responsibilities to participate in WHS practices
  - employee responsibility to ensure own work practices protect the safety of self, other workers and other people in the workplace
- workplace procedures for:
  - selecting and using personal protective equipment (PPE)
  - identifying hazards, including slip hazards and trip hazards
  - running motor vehicles in the workplace
  - emergency, fire and accident procedures, including:
    - personnel responsibilities
    - evacuation procedures and assembly points

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    - housekeeping procedures
- purpose and structure of WHS committees, including:
    - roles of workplace personnel
    - qualifications held by workplace personnel, including:
        - first aid
        - cardiopulmonary resuscitation
        - fire warden and workplace evacuation
        - work health and safety representative
- personal safety in an automotive workplace, including:
    - hearing protection
    - skin protection
    - protective clothing
    - protective footwear
    - eye protection
- manual handling, including:
    - storing items
    - planning the lift
    - using correct lifting techniques and equipment
- meaning of WHS symbols and signs
- machine and equipment safety, including:
    - using hand tools and hand-held power tools
    - using compressed air
    - using machine guards
    - electrical tools, including:
        - checking before use
        - faulty equipment tagging and isolation procedures
    - vehicle lifting equipment, including:
        - working in pits
        - using jacks and stands
        - using hoists
        - safe working load (SWL) of jacks and hoists
- vehicle safety, including:
    - engine moving parts
    - engine and exhaust hot components
    - electrical hazards associated with:
        - high voltage ignition systems
        - wearing jewellery while working around high current wiring systems
        - using electrical tools around water
    - batteries
    - fuel, including petrol, diesel and natural and petroleum gas

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  - high voltage in battery electrical and hybrid vehicles
  - high voltage injectors
- hazardous materials, including handling and storing:
  - oils
  - brake fluid
  - brake dust
  - chemicals
  - cleaning products
  - safety data sheets (SDS).

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having followed safe work practices while working in an automotive workplace, e.g. documented hazard inspection or incident report.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace procedures and instructions relating to safe work practices
- workplace safety and emergency evacuation procedures
- hazardous chemicals and dangerous goods information
- safety materials and equipment relevant to an automotive workplace
- fire safety equipment
- documents for recording workplace safety, accidents and incidents.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBCA101 Work in a retail bicycle environment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to work in a bicycle retail environment. The unit involves determining own career goals, developing bicycle industry knowledge, maintaining tools, equipment and own workspace, and completing workplace processes and documentation.

It applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to work in a retail bicycle environment	1.1 Determine job requirements in accordance with workplace instructions 1.2 Source and interpret workplace information relating to own job role 1.3 Identify workplace and team practices and lines of communication required of own job role
2. Undertake workplace activities	2.1 Greet customer in line with workplace customer service standards 2.2 Identify and address customer needs in accordance with workplace procedures and safety and environmental requirements

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Escalate complex customer requirements and feedback to supervisor as required 2.4 Complete sale in line with workplace procedures and processes
3. Complete work processes	3.1 Clear work area and dispose or recycle materials according to workplace procedures 3.2 Maintain workplace sales equipment within scope of own role and report if faulty 3.3 Complete workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Uses bicycle terminology in verbal exchanges with customers • Reports customer issues and outcomes.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Self-management	• Selects and uses required equipment, materials and processes.
Technology	• Uses workplace electronic devices when completing customer sales.

Unit Mapping Information

Supersedes and is equivalent to AURBCA001 Work in a retail bicycle environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBCA101 Work in a retail bicycle environment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- sell bicycle product to at least three different retail bicycle store customers in line with workplace procedures and customer service standards, in which the work must involve:
  - completing workplace documentation
  - operating and maintaining workplace equipment.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to work in a retail bicycle environment, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to work in a retail bicycle environment, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to working in a retail bicycle environment, including procedures for:
  - manually handling bicycles and components

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  - identifying workplace hazards
  - using personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- retail bicycle workplace procedures and practices, including:
  - customer service techniques
  - reporting and communication channels
- retail bicycle workplace expectations, including:
  - ethical practice
  - maintaining privacy and confidentiality
- key features of specialist bicycle equipment
- key bicycle industry knowledge, including:
  - bicycle types and their features
  - bicycle parts, accessories and their uses
  - bicycle categories and trends
  - key bicycle terminology
  - key bicycle websites and other sources of information
  - key cycling events
  - benefits of cycling for transport, health and fitness.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle retail store in which they have worked, e.g. employment contract, training record book or job card.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle retail workplace or simulated workplace
- workplace instructions
- electronic devices with internet connection
- different retail bicycle store customers with commercially realistic bicycle requirements
- tools and equipment appropriate to a retail bicycle environment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURBCA102 Select and adjust bicycles to fit riders

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to select and adjust a bicycle to suit its rider. The unit involves gathering rider information and matching the bicycle to the rider's ability and cycling requirements, adjusting the bicycle to fit, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to adjust bicycle	1.1 Determine job requirements from workplace instructions 1.2 Identify and confirm customer cycling requirements and preferences 1.3 Assess physical attributes of customer through discussion, observation and if appropriate, measurements 1.4 Identify suitable bicycle types and configurations to match customer requirements 1.5 Discuss features and benefits of selected bicycle with customer
2. Adjust bicycle to fit the rider	2.1 Source and interpret workplace procedures, manufacturer specifications, and safety and environmental requirements

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Identify and manage hazards and risks associated with the work 2.3 Select and check tools and equipment, including personal protective equipment (PPE) 2.4 Adjust bicycle components to match rider's attributes and requirements using specialist tools and equipment and according to workplace procedures 2.5 Observe customer test ride of bicycle to confirm riding comfort and efficiency and make further adjustments as required
3. Complete work processes	3.1 Make final inspection to ensure work meets workplace expectations and present bicycle ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Identifies customer measurements for bicycle type, size, component and adjustment requirements.
Oral communication	• Listens actively and uses questioning techniques to gather, clarify and confirm customer requirements and feedback • Uses relatable bicycle terminology.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.

Unit Mapping Information

Supersedes and is equivalent to AURBCA002 Select and adjust bicycles to fit riders.

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Assessment Requirements for AURBCA102 Select and adjust bicycles to fit riders

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- select, fit and adjust at least three different bicycles to differing requirements and builds with a different rider for each bicycle.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to select and adjust bicycles to fit riders, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to select and adjust bicycles to fit riders, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to adjusting bicycles, including procedures for manually handling bicycles
- environmental requirements, including procedures for trapping, storing and disposing of waste grease and oils
- procedures for use, maintenance and storage of specialist bicycle tools and equipment, including personal protective equipment (PPE)

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- bicycle types, categories and trends, including:
  - with and without gears
  - with lever-operated brakes
  - key bicycle terminology
  - bio-mechanical principles of cycling
- techniques and procedures for selecting and adjusting bicycles, including:
  - bicycle components and assembly methods
  - bicycle measuring techniques, including:
    - rider height and body shape
    - length of rider's arms and legs
- bicycle and component adjustment procedures, including:
  - checking frame size to match rider's physical attributes
  - checking and adjusting seat setting to fit rider
  - checking and adjusting handlebars and stem settings to fit rider
  - checking and adjusting clip-less pedal settings to match rider's needs
- features of rider comfort on a bicycle, including:
  - stability
  - efficiency
  - aerodynamics.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the riders they have measured and fitted to a bicycle, e.g. bicycle order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle retail workplace or simulated workplace
- workplace instructions
- PPE required when fitting bicycle to rider
- bicycle manufacturer specifications
- three riders with differing requirements and build requiring bicycle fittings
- three different bicycle models, including:
  - with and without gears
  - with lever-operated brakes
- tools and equipment appropriate for selecting and adjusting bicycles to fit riders.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURBTA102 Adjust bicycles and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to adjust bicycles and components. The unit involves preparing for the work, selecting and checking specialist tools and equipment, adjusting bicycle components to manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation for entering the bicycle retail, service and repair industry. The unit is designed for use in a highly supervised context.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to adjust bicycle	1.1 Determine job requirements from workplace instructions and identify bicycle to be adjusted 1.2 Identify hazards associated with the work and report to workplace supervisor 1.3 Inspect bicycle to determine component adjustment requirements according to manufacturer specifications and workplace procedures 1.4 Report inspection findings are reported according to workplace procedures and obtain authorisation to proceed

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ELEMENTS	PERFORMANCE CRITERIA
2. Carry out adjustments to bicycle components	2.1 Identify and check tools and equipment required for adjusting bicycles for serviceability and confirm adjustment method 2.2 Carry out adjustments according to manufacturer specifications, workplace procedures, safety and environmental requirements, and without causing damage to components or systems 2.3 Carry out post-adjustment testing to ensure safe and required operation of the bicycle according to workplace procedures
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Measures bicycle components and uses basic mathematical operations including addition and subtraction • Calculates deviations and tolerances from manufacturer specifications.
Oral communication	• Clarifies job requirements and reports inspection findings.
Reading	• Interprets adjustment procedures and specifications in manufacturer specifications and workshop literature.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

Unit Mapping Information

Supersedes and is equivalent to AURBTA002 Adjust bicycles and components.

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Assessment Requirements for AURBTA102 Adjust bicycles and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- adjust the following components on at least three different bicycles:
  - brakes
  - suspension
  - chain tension
  - seat
  - handlebars and steering
  - gears.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to adjust bicycles and components, including:
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to adjust bicycles and components, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to adjusting bicycles, including procedures for manually handling bicycles
- environmental requirements, including procedures for trapping, storing and disposing of waste grease and oils
- key bicycle terminology
- techniques and procedures for adjusting bicycles, including:
  - bicycle measuring techniques
  - reporting procedures and adjustment recommendations
  - bicycle and adjustment procedures for components specified in the performance evidence
  - bicycle post-adjustment inspection and testing procedures
  - types and use of specialist tools and equipment to adjust bicycles
  - assembly procedures for bicycles and components.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycles that they have adjusted, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions
- bicycle manufacturer specifications
- three different bicycles with components requiring adjustments
- tools and equipment appropriate for adjusting bicycles.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURBTA103 Assemble bicycles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to assemble bicycles from a semi-assembled state. The unit involves preparing for the work, selecting and using specialist tools and equipment, selecting bicycle components, assembling bicycle frames, fitting, adjusting and testing bicycle components and accessories, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to assemble bicycle	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret bicycle manufacturer assembly specifications and the Australian Competition and Consumer Commission (ACCC) product safety standards relating to bicycles 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check assembly tools and equipment, including personal protective equipment (PPE), for serviceability 1.5 Prepare work area and plan work to minimise waste and use time efficiently

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ELEMENTS	PERFORMANCE CRITERIA
2. Select components	2.1 Select components according to job specifications 2.2 Remove components from packaging and inspect for quality 2.3 List and report components identified as damaged or faulty to required personnel according to workplace procedures
3. Fit, test and adjust components	3.1 Fit components to bicycle frame according to assembly plan, manufacturer specifications, and safety and environmental requirements, without causing damage to components or systems 3.2 Lubricate components and adjust torque and tensions according to manufacturer assembly specifications 3.3 Inspect and test assembled bicycle for required tension of components and operation, and adjust as required according to workplace procedures 3.4 Check assembly to ensure it complies with ACCC product safety standards
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm bicycle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets numerical information to match component codes, serial numbers and manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

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Unit Mapping Information

Supersedes and is equivalent to AURBTA003 Assemble bicycles.

Links

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Assessment Requirements for AURBTA103 Assemble bicycles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- assemble three different semi-assembled bicycles, in which the work must involve:
  - at least one bicycle with gears
  - at least one bicycle with disc brakes
  - at least one road bicycle
- fit and adjust the following components during the above assemblies:
  - head stem and bearings
  - disc and rim brakes
  - seats
  - wheels
  - pedals
  - sprockets, gears and chains.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to assemble bicycles, including:
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to assemble bicycles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- work health and safety (WHS) requirements relating to assembling bicycles, including procedures for manually handling bicycles
- environmental requirements, including procedures for trapping, storing and disposing of waste grease and oils
- Australian Competition and Consumer Commission (ACCC) product safety standards relating to assembling bicycles
- key bicycle component and accessory terminology
- types of bicycles and their key features
- procedures for assembling and adjusting bicycles, including:
    - types and use of bicycle assembly tools and equipment, including torque wrenches
    - bicycle measuring techniques
    - fitting and adjustment procedures for the components specified in the performance evidence, as well as:
        - accessories, including bell and reflectors
        - controls
        - handlebars
        - seat greasing and lubrication procedures bicycle testing procedures, including post-assembly adjustment and safety checks.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycles that they have assembled, e.g. bicycle assembly orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions
- ACCC product safety standards relating to bicycles
- three different bicycles requiring assembly, including one bicycle with gears, one with disc brakes, and one road bicycle
- tools and equipment appropriate for assembling bicycles.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURBTA104 Assemble new boxed bicycles for retail sale

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to assemble new bicycles for retail sale. The unit involves preparing for the work, selecting and using specialist tools and equipment, identifying bicycle components, interpreting manufacturer assembly instructions, assembling the bicycle, checking and testing assembled bicycle for safe operation, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to assemble new bicycle	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret bicycle manufacturer assembly specifications and the Australian Competition and Consumer Commission (ACCC) product safety standards relating to bicycles 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check assembly tools and equipment for serviceability 1.5 Prepare work area and plan work to minimise waste and use time efficiently

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ELEMENTS	PERFORMANCE CRITERIA
2. Assemble bicycle	2.1 Unpack bicycle and check to ensure all components are included and not damaged 2.2 Report missing or damaged components according to workplace procedures 2.3 Assemble and lubricate bicycle and components, and adjust fastener tensions according to assembly plan, manufacturer specifications, and safety and environmental requirements, and without causing damage to components or systems 2.4 Inspect and test assembled bicycle for required tension of components and operation, and adjust as required according to workplace procedures 2.5 Check assembly to ensure it complies with ACCC product safety standards
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets numerical information to match component codes, serial numbers and manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

Unit Mapping Information

Supersedes and is equivalent to AURBTA004 Assemble new boxed bicycles for retail sale.

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Assessment Requirements for AURBTA104 Assemble new boxed bicycles for retail sale

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- assemble three different new boxed bicycles for retail sale, including:
  - at least one with gears
  - at least one with disc brakes
- fit and adjust the following components during the above assemblies:
  - head stem and bearings
  - disc and rim brakes
  - seats
  - wheels
  - pedals
  - sprockets, gears and chains.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to assemble new boxed bicycles for retail sale, including:
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to assemble new boxed bicycles for retail sale, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to assembling boxed bicycles, including procedures for manually handling bicycles
- environmental requirements, including procedures for:
    - trapping, storing and disposing of waste grease and oils
    - reusing or recycling surplus boxes
- Australian Competition and Consumer Commission (ACCC) product safety standards relating to assembling bicycles
- key bicycle component and accessory terminology
- types of bicycles and their key features
- procedures for assembling and adjusting bicycles, including:
    - types and use of bicycle assembly tools and equipment, including torque wrenches and personal protective equipment (PPE)
    - bicycle measuring techniques
    - accessory and component fitting and adjustment procedures for the components specified in the performance evidence, as well as:
        - bell and reflectors
        - controls
        - handlebars
        - seat
        - greasing and lubrication procedures
- bicycle testing procedures, including post-assembly adjustment and safety checks.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the new boxed bicycles that they have assembled, e.g. bicycle assembly orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions
- ACCC product safety standards relating to bicycles
- three different new boxed bicycles requiring assembly
- tools and equipment appropriate for assembling boxed bicycles.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURBTA106 Assemble components for custom bicycles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to select and assemble bicycle components in order to custom bicycles to meet client cycling requirements. The unit involves preparing for the work, selecting and using specialist tools and equipment, identifying and selecting bicycle frames, wheels and components, assembling and testing the bicycle, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Gather customer information	1.1 Determine job requirements from workplace instructions 1.2 Assess customer requirements and riding style through observation, discussion and taking measurements 1.3 Use sizing cycle or other methods to determine optimum bicycle set-up 1.4 Identify hazards associated with the work and manage risks
2. Select bicycle frame	2.1 Identify suitable frame types that match customer requirements 2.2 Research frame specifications, design and availability using various sources of information

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Select bicycle frame to match customer physical attributes and intended use 2.4 Calculate frame measurements, and select frame material and build method
3. Select wheels	3.1 Determine wheel size that suits frame measurements 3.2 Identify rims, spokes and hub types that suit customer needs 3.3 Discuss and determine features and benefits of different wheel designs and components with the customer 3.4 Select stock wheels and components or choose custom wheel design and calculate specifications
4. Select components	4.1 Research options for components and discuss with customer 4.2 Select components that meet customer design and price preferences
5. Confirm bicycle details	5.1 Specify custom paint requirements, as required 5.2 List components and parts and confirm details of availability 5.3 Calculate and document costs, and obtain customer approval for work
6. Assemble components	6.1 Prepare work area and plan work to minimise waste and use time efficiently 6.2 Prepare customer approved components for assembly 6.3 Select and check tools and equipment for serviceability 6.4 Assemble and lubricate bicycle and selected components and adjust fastener tensions according to manufacturer specifications, workplace procedures and safety and environmental requirements, and without causing damage to components or systems 6.5 Inspect and test assembled bicycle for required tension of components and operation, and adjust as required according to workplace procedures
7. Complete work processes	7.1 Conduct final inspection according to workplace procedures and confirm bicycle is ready for use 7.2 Clear work area and dispose of or recycle materials according to workplace procedures 7.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.

Numeracy	• Matches component codes, serial numbers and specifications
	• Uses bicycle sizing measuring equipment
	• Measures bicycle components and uses basic mathematical operations, including addition, subtraction, multiplication and division, to calculate:
	  • frame size
	  • component specifications and ratios
	  • adjustments and settings.

Oral communication	• Asks questions to clarify job, customer and supplier requirements.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Self-management	• Uses required methods and processes to select bicycle components that meet customer requirements for a customised bicycle.
Technology	• Uses specialist bicycle fitting and adjusting tools and equipment in line with workplace procedures.

Unit Mapping Information

Supersedes and is equivalent to AURBTA006 Assemble components for custom bicycles.

Links

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Assessment Requirements for AURBTA106 Assemble components for custom bicycles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- assemble, adjust and test at least one custom bicycle to meet customer requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of

- methods to locate and interpret information required to assemble components for custom bicycles, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to assemble components for custom bicycles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to assembling custom bicycles, including procedures for manually handling bicycles
- environmental requirements, including procedures for trapping, storing and disposing of waste grease and oils
- types of bicycles and range of components and accessories, including:
  - wheels, rims, spokes and hubs

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    - handlebars and headset
    - forks and suspension
    - saddle and seat post
    - cassette, chain rim, chain and crank
    - pedals
    - front and rear derailleur
    - bottom bracket
    - brake, brake lever and brake shift
    - racks, lights and other accessories
- key bicycle terminology
- biomechanical principles of cycling
- customer requirements relating to assembling components for custom bicycles, including:
    - bicycle features
    - frame materials
- techniques for measuring and/or selecting custom bicycle components, including:
    - selecting and checking personal protective equipment (PPE)
    - procedures for using bicycle sizing measuring equipment
    - design requirements of bicycle frames and wheels
    - purpose and relationships of bicycle frames, wheels, suspension, drivetrain and steering systems
    - principles of bicycle safety
    - physical attributes to consider when selecting a bicycle frame, including:
        - height
        - body shape and weight distribution
        - length of arms and legs
        - fitness, injuries and style of cycling
    - key features and materials used in bicycle frames, wheels and components
    - bicycle component specifications
    - bicycle accessories and fitting requirements
- techniques for assembling, adjusting and testing custom bicycles, including:
    - custom build procedures
    - testing and adjustment methods
    - types and use of bicycle assembly tools and equipment
    - greasing and lubrication procedures
    - fitting and adjustment procedures for the accessories and components essential to bicycle set-up, including:
        - fork trail, rake and offset
        - head tube length and angle
        - wheelbase
        - bottom bracket drop

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    - seat tube length and angle
    - top tube length
    - setback
    - stem length
    - saddle height
- post-assembly safety checks
- bicycle and component adjustment procedures.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the components for custom bicycles that they have selected and assembled, e.g. build orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions
- personal protective equipment (PPE) required to assemble a custom bicycle
- bicycle and component manufacturer specifications
- customer requiring a custom bicycle
- a bicycle frame and components for assembly
- bicycle sizing measuring equipment
- tools and equipment appropriate for selecting components and assembling a custom bicycle.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURBTA108 Disassemble and pack a bicycle for transport

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to disassemble and pack a bicycle for transport. It involves the skills and knowledge required to prepare to pack a bicycle for transport, disassemble a bicycle, select appropriate packing material and pack a bicycle for transport following the relevant operating procedures and codes of practice required for the task whilst completing workplace processes and documentation.

The unit applies to those working in the bicycle sales and service and repair industry. This unit does not apply to light and heavy vehicle engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to pack a bicycle for transport	1.1 Determine job requirement from workplace instructions 1.2 Identify hazards and manage risks associated with packing bicycle for transport 1.3 Analyse and select method to pack bicycle for transit according to manufacturer instructions and workplace procedures
2. Disassemble bicycle	2.1 Source and interpret service information to disassemble bicycle 2.2 Inspect, check and select tools, equipment and materials for

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ELEMENTS	PERFORMANCE CRITERIA
	serviceability 2.3 Identify hazards and manage risks associated with the work 2.4 Disassemble bicycle according to workplace and manufacturer procedures
3. Pack bicycle for transport	3.1 Carry out packing of bicycle into determined transport container according to workplace procedures 3.2 Inspect transport container and confirm bicycle is secure and seal transport container 3.3 Report condition of transport container and document according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Calculates weights and volumes, including multiplication, division, addition and subtraction.
Oral communication	• Clarifies instructions • Reports inspection findings and makes packing recommendations.
Reading	• Interprets information from manufacturer and workshop literature when packing a bicycle for transport.
Problem solving	• Refers problems outside area of responsibility to appropriate person.

Unit Mapping Information

New unit.

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Links

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Assessment Requirements for AURBTA108 Disassemble and pack a bicycle for transport

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- disassemble and pack two bicycles into one of the following containers, selecting a different container type for each bicycle:
  - manufacturer provided cardboard box
  - soft bicycle transit bag
  - hard shell bicycle case.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to disassemble and pack a bicycle into a box, including:
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to disassemble and pack a bicycle into a box, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to disassembling a bicycle and packing for transit, including:
  - securing all disassembled components

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  - maintaining structure and integrity of the transport container
- inspection procedures for packing a bicycle into a container, including:
  - identifying protrusions
  - identifying vulnerable and critical components
  - selecting the transport container for the application
- post-packing testing procedures for packing a bicycle into a container, including tests across vulnerable components of transport container.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to disassembling and packing a bicycle into a transport container equipment that they have worked on, e.g. logistics orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications
- two bicycles specified in the performance evidence and requiring disassembly
- tools, equipment and materials appropriate for disassembling and packing bicycles.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURBTB101 Service and repair bicycle mechanical braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to service and repair bicycle mechanical braking systems. The unit involves preparing for the work, selecting and using specialist tools and equipment, planning, inspecting, servicing and repairing, and testing the bicycle braking system, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical - Brakes

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to service and repair bicycle mechanical braking system	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret manufacturer specifications, workplace procedures and other relevant technical information 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools and equipment, including personal protective equipment (PPE), for serviceability 1.5 Plan work to avoid damage to bicycle, minimise waste and use time efficiently
2. Inspect and diagnose	2.1 Inspect mechanical braking system for faults and worn or damaged components using visual inspection methods and

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ELEMENTS	PERFORMANCE CRITERIA
braking system	comparison of measurements against manufacturer specifications 2.2 Determine condition of bicycle braking system in line with system specifications and customer requirements 2.3 Identify service and repair options 2.4 Document and cost service and repair items for customer approval according to workplace procedures
3. Carry out service and repair of braking system	3.1 Use tools and equipment according to workplace procedures and manufacturer specifications 3.2 Carry out service and repair of mechanical braking system according to work plan and safety and environmental requirements 3.3 Check and fit required replacement parts according to manufacturer specifications 3.4 Check and test braking system specifications for required operation in a safe location 3.5 Make adjustments to braking system as required according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm bicycle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses measuring equipment, including metric and imperial units of measurement • Matches component codes, serial numbers and specifications.
Oral communication	• Asks questions to clarify instructions and requirements.
Reading	• Interprets mechanical brake component technical information and manufacturer specifications.

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SKILL	DESCRIPTION
Problem solving	• Identifies faults, quality issues and potential problems associated with bicycle mechanical braking systems during service and repair activities.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

Unit Mapping Information

Supersedes and is equivalent to AURBTB001 Service and repair bicycle mechanical braking systems.

Links

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Assessment Requirements for AURBTB101 Service and repair bicycle mechanical braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service, repair and adjust at least three of the following different types of bicycle mechanical braking systems:
  - cantilever
  - disc brakes
  - internal coaster
  - drum brakes
  - composite material brake pads
  - mechanical linkages and cables
  - integrated brake and gear levers.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of

- methods to locate and interpret information required to service and repair bicycle mechanical braking systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to service and repair bicycle mechanical braking systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to servicing and repairing bicycle mechanical braking systems, including procedures for:
    - manually handling bicycles and their systems
    - identifying workplace hazards
    - using personal protective equipment (PPE)
    - identifying safe location for testing brakes
- environmental requirements, including procedures for disposing of waste materials
- bicycle braking system terminology
- application, purpose and function of bicycle mechanical braking system principles
- mechanical braking system types, including:
    - cantilever, disc, internal coaster and drum brakes
    - composite material brake pads
    - mechanical linkages and cables
    - integrated brake and gear levers
- types and use of tools and equipment used to service and repair bicycle mechanical braking systems
- servicing and repair options, including:
    - on- and off-site servicing
    - servicing and adjusting mechanical braking system components
    - upgrading braking components
- techniques for servicing and repairing bicycle mechanical braking systems, including:
    - identification of bicycle mechanical brake components, materials and specifications
    - fault identification
    - brake repair and adjustment techniques
    - bicycle measuring techniques
    - mechanical brake testing procedures.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle mechanical braking systems that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- bicycle workplace or simulated workplace, including location to test bicycle braking system
- workplace instructions detailing job requirements
- PPE required to service and repair bicycle mechanical braking systems
- manufacturer or brake component specifications and technical information for mechanical braking system
- components and parts to suit different mechanical braking systems
- three different bicycles with mechanical braking systems specified in the performance evidence and requiring repair and servicing
- tools and equipment appropriate for servicing and repairing bicycle mechanical braking systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURBTD101 Service bicycle steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to service bicycle steering systems. It involves preparing for the work, selecting and using specialist tools and equipment, inspecting, servicing and testing the bicycle steering system, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical – Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to service bicycle steering system	1.1 Identify job requirements are determined from workplace instructions 1.2 Inspect condition of steering system for faults and worn or damaged components and overall condition using visual inspection methods and by comparing measurements against manufacturer specifications 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check materials, parts, tools and equipment, including personal protective equipment (PPE), for serviceability 1.5 Prepare work area and plan service sequence, including

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ELEMENTS	PERFORMANCE CRITERIA
	post-service testing, to avoid damage to bicycle, minimise waste and use time efficiently
2. Carry out service of steering system	2.1 Use tools and equipment according to workplace procedures and manufacturer specifications 2.2 Service bicycle steering system according to job requirements, manufacturer specifications, and safety and environmental requirements 2.3 Test operation of serviced steering system through its full range and make adjustments as required 2.4 Report results and quality issues to authorised personnel as required
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm bicycle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Asks questions to clarify instructions and requirements.
Numeracy	• Completes measurements to determine steering system condition and operation.
Problem solving	• Identifies technical and operational faults and defects, quality issues and potential problems associated with bicycle steering system during service activities.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

Unit Mapping Information

Supersedes and is equivalent to AURBTD001 Service bicycle steering systems.

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Assessment Requirements for AURBTD101 Service bicycle steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service and test at least three different bicycle steering systems according to manufacturer specifications
- in the course of the above work service the following:
  - bicycle headsets
  - handlebars and stems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to service bicycle steering systems, including:
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to service bicycle steering systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to servicing bicycle steering systems, including procedures for:
  - manually handling bicycles and their steering systems

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    - identifying workplace hazards
    - using personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- application, purpose and function of bicycle steering system principles
- bicycle steering system components, including:
    - forks
    - headsets
    - handlebars and stems
- techniques for servicing bicycle steering systems, including:
    - identification of bicycle steering components, materials and specifications
    - fault identification
    - bicycle measuring techniques
    - steering system servicing and adjustment techniques
    - steering system testing procedures
- bicycle steering system terminology
- types and use of tools and equipment used to service bicycle steering systems
- servicing options, including:
    - on- and off-site servicing
    - servicing and adjusting steering system components
    - upgrading steering components.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle steering systems that they have serviced, e.g. service orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace, including location to test bicycle steering system
- workplace instructions detailing job requirements
- manufacturer and steering system component specifications
- three different bicycles requiring servicing and testing of their steering systems
- PPE required to service bicycle steering systems
- tools and equipment appropriate for servicing bicycle steering systems.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURBTD102 Service bicycle suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to service bicycle suspension systems. The unit involves preparing for the work, selecting and using specialist tools and equipment, inspecting, servicing and testing the bicycle suspension system and its components, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical - Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to service bicycle suspension system	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret manufacturer specifications, workplace procedures and other relevant technical information 1.3 Inspect condition of bicycle suspension system for faults and worn or damaged components using visual and physical methods and compare with manufacturer specifications 1.4 Identify hazards associated with the work and manage risks 1.5 Select and check tools and equipment, including personal protective equipment (PPE), for serviceability 1.6 Prepare work area and plan service sequence to avoid damage to bicycle, minimise waste and use time efficiently

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ELEMENTS	PERFORMANCE CRITERIA
2. Carry out service of suspension system	2.1 Use tools and equipment according to workplace procedures and manufacturer specifications 2.2 Service bicycle suspension system according to job requirements, manufacturer specifications, and safety and environmental requirements 2.3 Test operation of serviced suspension system through its full range and make adjustments as required 2.4 Report results and quality issues to authorised personnel as required
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm bicycle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Completes measurements to determine suspension system condition and operation • Identifies and calculates bicycle suspension system settings and adjustments.
Oral communication	• Asks questions to clarify instructions and requirements.
Problem solving	• Identifies technical and operational faults and defects, quality issues and potential problems associated with bicycle suspension system during service activities.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

Unit Mapping Information

Supersedes and is equivalent to AURBTD002 Service bicycle suspension systems.

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Assessment Requirements for AURBTD102 Service bicycle suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service and test at least one of each of the following three different bicycle suspension systems according to manufacturer specifications:
  - elastomer and spring units system
  - mechanical system
  - hydraulic system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to service bicycle suspension systems, including:
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to service bicycle suspension systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to servicing bicycle suspension systems, including procedures for:
  - manually handling bicycles and their suspension systems

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    - identifying workplace hazards
    - using personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- bicycle suspension system terminology
- types of bicycle suspension systems and application of suspension mechanical principles
- service requirements of a bicycle suspension system
- types and use of tools and equipment used to service bicycle suspension systems
- techniques and processes for servicing bicycle suspension systems, including:
    - identification of bicycle suspension components, materials and specifications, including:
        - elastomer and spring units
        - mechanical systems
        - pneumatic systems
        - hydraulic systems
    - fault identification
    - bicycle measuring techniques
    - suspension system adjustment techniques
- suspension system testing procedures
- servicing options, including:
    - on- and off-site servicing
    - servicing and adjusting suspension system components
    - upgrading suspension components.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle suspension systems that they have serviced, e.g. service orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace, including location to test bicycle suspension system
- workplace instructions detailing job requirements
- manufacturer specifications for suspension systems
- PPE required to service bicycle suspension systems
- three different bicycle suspension systems specified in the performance evidence and requiring servicing and testing

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- tools and equipment appropriate for servicing bicycle suspension systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURBTD103 Repair and overhaul bicycle steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to repair and overhaul bicycle steering systems. The unit involves preparing for the work, selecting and using specialist tools and equipment, inspecting, repairing and testing the bicycle headset, handlebar and stem, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical - Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair and overhaul bicycle steering system	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret manufacturer specifications, workplace procedures and other relevant technical information 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools and equipment for serviceability 1.5 Plan work to avoid damage to bicycle, minimise waste and use time efficiently
2. Inspect steering system	2.1 Check bicycle steering system for faults and worn or damaged components using visual inspection methods and by comparison of measurements against manufacturer specifications

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Identify, document and cost repair and replacement options for customer approval according to workplace procedures 2.3 Prepare work area, replacement parts and bicycle for repair work
3. Carry out repair and overhaul of steering system	3.1 Carry out repair and overhaul activities according to workplace procedures, work plan, and safety and environmental requirements 3.2 Check and fit required replacement parts according to manufacturer specifications 3.3 Check and test repaired steering system for required operation according to manufacturer specifications 3.4 Adjust repaired steering system and align as required according to workplace procedures 3.5 Report results and quality issues to authorised personnel as required
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm bicycle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Asks questions to clarify instructions and requirements.
Numeracy	• Completes measurements to determine repair requirements.
Problem solving	• Identifies technical and operational faults and defects, quality issues and potential problems associated with bicycle steering systems.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

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Unit Mapping Information

Supersedes and is equivalent to AURBTD003 Repair and overhaul bicycle steering systems.

Links

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Assessment Requirements for AURBTD103 Repair and overhaul bicycle steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- repair and overhaul at least three different bicycle steering systems according to manufacturer specifications
- in the course of the above work, repair and overhaul the following components:
  - forks
  - headsets
  - handlebars and stems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to repair and overhaul bicycle steering systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to repair and overhaul bicycle steering systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to repairing and overhauling bicycle steering systems, including procedures for:
  - manually handling bicycles and their steering systems
  - identifying workplace hazards
  - using tools and equipment, including personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- key bicycle steering system terminology
- purpose of bicycle steering systems and their relationship to suspension, wheels, drivetrain, frame and braking systems
- operating principles of steering system components, including:
  - forks
  - headsets
  - handlebars and stems
- types and use of tools and equipment used to repair and overhaul bicycle steering systems
- techniques and processes for repairing and overhauling bicycle steering systems, including:
  - identification of bicycle steering components, materials and specifications
  - selection and checking of personal protective equipment
  - fault identification
  - measuring techniques
  - steering system adjustment techniques.
  - steering system testing procedures.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle steering systems that they have repaired and overhauled, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace, including location to test bicycle steering system
- workplace instructions detailing job requirements
- manufacturer specifications and technical information for bicycle steering systems
- PPE required to repair and overhaul bicycle steering systems
- component parts as required
- three different bicycles with steering systems requiring repair and overhaul

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- tools and equipment appropriate for repairing and overhauling bicycle steering systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURBTD104 Repair and overhaul bicycle suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to repair and overhaul bicycle suspension systems. The unit involves preparing for the work, selecting and using specialist tools and equipment, inspecting, repairing and testing the bicycle suspension and components, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical - Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair and overhaul bicycle suspension system	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret manufacturer specifications, workplace procedures and other required technical information 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools and equipment for serviceability 1.5 Plan work to avoid damage to bicycle, minimise waste and use time efficiently
2. Inspect suspension system	2.1 Check bicycle suspension system for faults and worn or damaged components using visual inspection methods and by comparison of measurements against manufacturer specifications

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Identify, document and cost repair and replacement options for customer approval according to workplace procedures 2.3 Prepare work area, replacement parts and bicycle for repair work
3. Carry out repair and overhaul of suspension system	3.1 Carry out repair and overhaul activities according to workplace procedures, work plan, and safety and environmental requirements 3.2 Check and fit required replacement parts according to manufacturer specifications 3.3 Check and test repaired suspension system for required operation according to manufacturer specifications 3.4 Adjust repaired suspension system and align as required according to workplace procedures 3.5 Report results and quality issues to authorised personnel as required
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm bicycle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Asks questions to clarify instructions and requirements, including with the customer.
Problem solving	• Identifies technical and operational faults and defects, quality issues and potential problems associated with bicycle suspension systems.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

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Unit Mapping Information

Supersedes and is equivalent to AURBTD004 Repair and overhaul bicycle suspension systems.

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Assessment Requirements for AURBTD104 Repair and overhaul bicycle suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- repair and overhaul at least one of each of the following three different bicycle suspension systems according to manufacturer specifications:
  - elastomer and spring units system
  - mechanical system
  - hydraulic system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to repair and overhaul bicycle suspension systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to repair and overhaul bicycle suspension systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to repairing and overhauling bicycle suspension systems, including procedures for:
  - manually handling bicycles and their suspension systems
  - identifying workplace hazards
  - using tools and equipment, including personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- key bicycle suspension terminology
- types of bicycle suspension systems, system components and their functions
- application of mechanical and hydraulic principles as they relate to bicycle suspension systems
- suspension system components, including:
  - elastomer and spring units
  - mechanical system
  - pneumatic system
  - hydraulic system
- types and use of tools and equipment used to repair and overhaul bicycle suspension systems
- techniques and processes for repairing and overhauling bicycle suspension systems, including:
  - selection and checking of personal protective equipment
  - identification of bicycle suspension components, materials and specifications
  - fault identification
  - measuring techniques
  - suspension system adjustment techniques
  - suspension system testing procedures.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle suspension systems that they have repaired and overhauled, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace, including location to test bicycle suspension system
- workplace instructions detailing job requirements
- manufacturer specifications and technical information for bicycle suspension systems

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- PPE required to repair and overhaul bicycle suspension systems
- component parts as required
- three different bicycles with suspension systems requiring repair and overhaul
- tools and equipment appropriate for repairing and overhauling bicycle suspension systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBTJ101 Remove, repair and refit bicycle tyres

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove, repair and refit bicycle tyres. The unit involves preparing for the work, selecting and using specialist tools and equipment, removing the tyres and identifying tyre damage causes, repairing the tyres, inflating them to recommended pressure and fitting, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry. The bicycle tyres to be repaired and refitted include road, off-road, tubed or tubeless.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove, repair and refit bicycle tyres	1.1 Determine job requirements from workplace instructions and customer requirements 1.2 Source and interpret bicycle rim types and tyre manufacturer specifications and fitting instructions 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools and equipment for serviceability 1.5 Prepare work area and plan work to avoid damage to bicycle, minimise waste, and use time efficiently
2. Carry out removal, repair and refitting of	2.1 Identify and confirm repair options and techniques 2.2 Carry out removal, repair, refitting and testing of bicycle tyre

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ELEMENTS	PERFORMANCE CRITERIA
bicycle tyres	and tube according to safety and environmental requirements 2.3 Remove, repair, refit and inflate tyres and tubes without causing damage to bicycle or wheels 2.4 Check refitted bicycle tyres and tube against customer requirements and test according to workplace procedures
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm bicycle is ready for use 3.2 Report problems outside own area of responsibility to required person 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets stock codes and identify tyre sizes • Interprets and applies tyre inflation pressures from specifications.
Oral communication	• Asks questions to clarify instructions and requirements, including with the customer.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

Unit Mapping Information

Supersedes and is equivalent to AURBTJ001 Remove, repair and fit bicycle tyres.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBTJ101 Remove, repair and refit bicycle tyres

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove, repair, refit, inflate and test at least five different bicycle tyres, including at least one for each of the following types of bicycles:
  - road bicycle
  - hybrid
  - BMX
  - commuter.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove, repair and refit bicycle tyres, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to remove, repair and refit bicycle tyres, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to removing, repairing and refitting bicycle tyres, including procedures for:
  - manually handling bicycles and tyres
  - identifying workplace hazards
  - using tools and equipment, including personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- key bicycle terminology
- types and use of tools and equipment used to remove, repair and refit bicycle tyres
- techniques for removing, repairing and refitting bicycle tyres, including:
  - selection and checking of personal protective equipment
  - bicycle types and categories
  - tyre and tube sizes
  - rim size and rim material type, including:
    - steel
    - aluminium
    - composite material
  - inflation pressures and test procedures.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle tyres that they have removed, repaired and refitted, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions detailing job requirements
- manufacturer tyre and rim specifications and fitting instructions
- PPE required to remove, repair and refit bicycle tyres
- bicycle wheels, tyres and tubes for the types of bicycles specified in the performance evidence
- tools and equipment appropriate for removing, repairing, refitting and inflating bicycle tyres.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURBTJ102 Service bicycle wheels and hubs

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to service bicycle wheels and hubs. The unit involves preparing for the work, selecting and using specialist tools and equipment, inspecting, removing, adjusting and refitting the bicycle wheels and hubs, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to service bicycle wheels and hubs	1.1 Determine job requirements from workplace instructions 1.2 Research and interpret bicycle manufacturer specifications and service instructions for wheels and hubs 1.3 Inspect condition of bicycle wheels and hubs for faults and worn or damaged components using visual inspection methods and comparison of measurements against manufacturer specifications 1.4 Identify hazards associated with the work and manage risks 1.5 Select and check tools and equipment for serviceability 1.6 Prepare work area and plan work to avoid damage to bicycle, minimise waste and use time efficiently

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ELEMENTS	PERFORMANCE CRITERIA
2. Carry out service of wheels and hubs	2.1 Remove bicycle wheels according to workplace procedures and manufacturer specifications 2.2 Service wheels and hubs according to work plan, manufacturer specifications, and safety and environmental requirements 2.3 Refit serviced wheels and hubs to bicycle and test and adjust as required according to job requirements and workplace procedures
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm bicycle is ready for use 3.2 Report problems outside own area of responsibility to required person 3.3 Clear work area and dispose of or recycle materials according to workplace procedures 3.4 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Calculates required adjustments and settings.
Oral communication	• Asks questions to clarify instructions and requirements, including with the customer.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

Unit Mapping Information

Supersedes and is equivalent to AURBTJ002 Service bicycle wheels and hubs.

Links

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Assessment Requirements for AURBTJ102 Service bicycle wheels and hubs

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service at least three different bicycle wheels and at least three different hubs.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to service bicycle wheels and hubs, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to service bicycle wheels and hubs, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to servicing bicycle wheels and hubs, including procedures for:
  - manually handling bicycles and wheels
  - identifying workplace hazards
  - using tools and equipment, including personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials

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- key bicycle terminology relating to wheels and hubs
- application, purpose and function of bicycle wheels and hubs
- bicycle wheel and hub components, including:
  - spoke, disc and tri-spoke wheels
  - conventional, clincher, tubular, aero, deep dished and composite material wheel rims
  - quick release, allen head and nut wheel fasteners
  - vertical and horizontal frame lugs
  - disc, drum and coaster, and internal foot brake hubs
  - loose ball, cage and roller bearings
- types of lubricants and their application
- types and use of tools and equipment used to service bicycle wheels and hubs
- techniques for servicing bicycle wheels and hubs, including:
  - procedures for different types of bicycles
  - identifying wheel and hub service needs
  - selection and checking of personal protective equipment
  - wheel and hub specifications
  - wheel and hub mechanical principles
  - wear or faults in bicycle wheel and hubs
  - torque measurement and adjustment of wheels
  - wheel and hub testing procedures.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle wheels and hubs that they have serviced, e.g. service orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions detailing job requirements
- wheel and hub technical and component specifications
- PPE required to service bicycle wheels and hubs
- three bicycles with differing wheels and hubs requiring servicing and testing
- tools and equipment appropriate for servicing bicycle wheels and hubs.

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AURBTJ103 Design and build bicycle wheels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to design and build bicycle wheels with different hub, spoke and rim configurations. The unit involves preparing for the work, selecting and using specialist tools and equipment to design and carry out the building and testing of bicycle wheels, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to design and build bicycle wheels	1.1 Determine job requirements from workplace instructions, including wheel materials, components and spoke patterns 1.2 Research and interpret bicycle wheel design requirements and manufacturer specifications 1.3 Confirm bicycle wheel design and specifications with customer
2. Prepare to build bicycle wheels	2.1 Check wheel components against specifications and inspect for quality prior to build 2.2 Plan bicycle build to use time efficiently 2.3 Identify hazards associated with the work and manage risks 2.4 Select and check tools and equipment for serviceability

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ELEMENTS	PERFORMANCE CRITERIA
	2.5 Prepare work area, wheels, components and materials
3. Build and test bicycle wheels	3.1 Build bicycle wheels according to job and customer requirements, work plan, and safety and environmental requirements 3.2 Select bicycle wheel hubs and rims and calculate spoke lengths 3.3 Lace and tension bicycle wheel spokes according to manufacturer specifications and workplace instructions 3.4 Check built bicycle wheels for symmetry and test for trueness against specifications 3.5 Report results and quality issues to authorised personnel as required
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm bicycle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.

Numeracy	• Interprets stock codes
	• Identifies wheel and hub sizes and spoke numbers
	• Uses basic mathematical operations to calculate:
	  • spoke lengths
	  • settings and adjustments to wheel and hub components.

Oral communication	• Asks questions to clarify instructions and requirements, including with customers and suppliers.

Problem solving	• Identifies:
	  • potential faults in wheel design
	  • technical and procedural problems to avoid waste.

Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

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Unit Mapping Information

Supersedes and is equivalent to AURBTJ003 Design and build bicycle wheels.

Links

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Assessment Requirements for AURBTJ103 Design and build bicycle wheels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and build at least three different bicycle wheels to specification, with each wheel including the following:
  - lacing a 32 hole three-cross spoke pattern
  - disc and non-disc brake specific patterns.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to design and build bicycle wheels, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to design and build bicycle wheels, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to designing and building bicycle wheels, including procedures for:
  - manually handling bicycle wheels

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  - identifying workplace hazards
  - using tools and equipment, including personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- job requirements for spoke patterns, wheel components and wheel materials
- key bicycle terminology relating to wheel build for different bicycle types
- key features to be considered in wheel design:
  - hubs, spoke and rim selection
  - 32 hole three-cross spoke pattern
  - disc and non-disc brake specific patterns
  - symmetrical and asymmetrical patterns
  - wheel dynamics and loading
- wheel and hub mechanical principles
- bicycle wheel components and their specifications, including:
  - steel, aluminium and composite material rims
  - high flange, low flange and integrated brake hubs
  - metal and composite hub material
  - steel, aluminium and composite spoke material
  - straight gauge, double butted and bladed spokes
  - spoke nipples
  - spoke lacing patterns
- types and use of tools and equipment used to design and build bicycle wheels
- techniques for designing and building bicycle wheels, including:
  - material used in bicycle wheels
  - selecting and checking of personal protective equipment
  - planning time efficient build sequence and post-build testing
  - lacing and tensioning spoke pattern
  - calculating spoke lengths
  - assembly, truing and tensioning of wheels
  - symmetrical and asymmetrical patterns of wheels
  - wheel dynamics and loading
  - torque measurement and adjustment of wheels
  - wheel and hub testing procedures.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle wheels they have designed and built, e.g. build orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions detailing job requirements
- manufacturer and technical bicycle wheel specifications
- PPE required to design and build bicycle wheels
- wheel components specified in the range of conditions
- three different bicycle wheels as specified in the performance evidence requiring a complete build
- tools and equipment appropriate for designing and building bicycle wheels.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURBTJ104 Repair and overhaul bicycle wheels and hubs

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to repair and overhaul bicycle wheels with different hub, spoke and rim configurations. The unit involves preparing for the work, selecting and using specialist tools and equipment, repairing and testing the bicycle wheels and hubs to manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair and overhaul bicycle wheels and hubs	1.1 Determine job requirements from workplace instructions, including wheel and hub repair methods and materials 1.2 Access and interpret manufacturer specifications, workplace procedures and other required technical information 1.3 Inspect bicycle wheels and hubs for worn or damaged components 1.4 Identify and confirm repair options and techniques, and identify hazards associated with the work 1.5 Source replacement wheel and hub parts and components 1.6 Select and check tools and equipment for serviceability

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ELEMENTS	PERFORMANCE CRITERIA
	1.7 Plan work avoid damage to bicycle, minimise waste and use time efficiently 1.8 Prepare work area and wheel and hub for repair or overhaul
2. Carry out repair and overhaul of bicycle wheels and hubs	2.1 Remove bicycle wheels according to manufacturer specifications and safety and environmental requirements 2.2 Check rims and adjust as required 2.3 Check spokes and replace any broken 2.4 Adjust and tension spokes 2.5 Use wheel truing equipment and techniques to check for required operation according to manufacturer specifications and adjust as required, prior to refitting wheel 2.6 Refit wheels and regrease wheel hubs according to workplace procedures 2.7 Report results and quality issues to authorised personnel as required
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets wheel and hub specifications • Calculates quantities of repair materials and components.
Oral communication	• Asks questions to clarify instructions and requirements, including with the customer.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

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Unit Mapping Information

Supersedes and is equivalent to AURBTJ004 Repair and overhaul bicycle wheels and hubs.

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Assessment Requirements for AURBTJ104 Repair and overhaul bicycle wheels and hubs

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- repair and overhaul at least three different bicycle wheels and hubs according to manufacturer specifications, including:
  - at least one spoke wheel
  - at least one disc wheel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to repair and overhaul bicycle wheels and hubs, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to repair and overhaul bicycle wheels and hubs, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to repairing and overhauling bicycle wheels and hubs, including procedures for:
  - manually handling bicycle wheels

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    - identifying workplace hazards
    - using tools and equipment, including personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- key bicycle wheel and hub terminology
- wheel and hub mechanical principles
- types of bicycle wheel and hub systems and components, and their specifications, including:
    - spoke, disc and tri-spoke wheels
    - conventional, clincher, tubular, aero, deep dished and composite material wheel rims
    - quick release, allen head and nut wheel fasteners
    - disc, drum and coaster and internal foot brake hubs
- types and use of tools and equipment used to repair and overhaul bicycle wheels and hubs
- techniques and processes for repairing and overhauling bicycle wheels and hubs, including:
    - selection and checking of personal protective equipment
    - types of wear or faults in bicycle wheel and hubs
    - measuring techniques
    - torque measurement and adjustment of wheels
    - testing procedures.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle wheels and hubs that they have repaired and overhauled, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions detailing job requirements
- wheel and hub technical and component specifications
- PPE required to repair and overhaul bicycle wheels and hubs
- three different bicycles requiring wheel and hub system repair and overhaul as specified in the performance evidence
- tools and equipment appropriate for repairing and overhauling bicycle wheels and hubs.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURBTK101 Maintain specialised bicycle repair tools and equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to maintain specialised tools and equipment used when servicing and repairing bicycles. The unit involves preparing for the work, identifying correct tools and equipment, maintaining them according to manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical – Tools and Equipment

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Select and prepare specialised bicycle tools and equipment	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret manufacturer operating instructions relating to tools and equipment, workplace procedures, and safety and environmental requirements 1.3 Identify hazards associated with the work and manage risks within scope of own role 1.4 Select and check personal protective equipment (PPE) for serviceability
2. Service and maintain tools and equipment	2.1 Service, adjust and maintain tools and equipment according to workplace procedures and manufacturer schedules

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Identify, remove and report damaged or worn tools and equipment according to workplace procedures 2.3 Report quality issues as required to authorised personnel
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Update and maintain maintenance logs and report regularly according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets labels and instructions to determine differences between metric and imperial tools, including sizes.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised bicycle tools and equipment in line with workplace procedures.

Unit Mapping Information

Supersedes and is equivalent to AURBTK001 Maintain specialised bicycle repair tools and equipment.

Links

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Assessment Requirements for AURBTK101 Maintain specialised bicycle repair tools and equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- perform maintenance on at least three different specialised bicycle repair tools
- complete log or report relating to maintenance of above tools.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to maintain specialised bicycle repair tools and equipment, including:
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to maintain specialised bicycle repair tools and equipment, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to maintaining specialised bicycle repair tools and equipment, including procedures for:
  - manually handling the tools
  - identifying workplace hazards
  - using personal protective equipment (PPE)

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- environmental requirements, including procedures for disposing of waste materials
- types and uses of hand tools, including:
  - sockets and ratchets
  - spanners, including ring spanners, open-ended spanners
  - allen keys
  - screwdrivers
- methods of identifying faults in specialised bicycle repair tools and equipment
- reporting procedures relating to specialised bicycle repair tools and equipment.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the specialised bicycle repair tools and equipment they have maintained, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- workplace instructions detailing job requirements
- PPE required to maintain specialised bicycle repair tools and equipment
- maintenance schedules of specialised bicycle repair tools and equipment
- operating instructions or manuals relating to specialised tools and equipment
- specialised tools and equipment appropriate for repairing bicycles.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBTR101 Inspect and service electric power-assisted bicycles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service electric power-assisted bicycle systems and components. The unit involves preparing for the work, selecting and using specialist tools and equipment, inspecting the bicycle condition, interpreting manufacturer specifications, performing routine maintenance and testing on electric bicycle components, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry. Electric power-assisted bicycles are throttle and pedal assist sensor (PAS) bicycles with 250 watts rated power at the wheel.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Bicycle Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service electric power-assisted bicycle	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret manufacturer specifications and workplace procedures 1.3 Select and check tools and equipment for serviceability 1.4 Identify hazards associated with the work and manage risks 1.5 Prepare work area and plan service sequence to avoid damage to bicycle, minimise waste and use time efficiently
2. Inspect bicycle	2.1 Inspect condition of bicycle for faults and worn,

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ELEMENTS	PERFORMANCE CRITERIA
	non-serviceable or damaged parts according to workplace procedures 2.2 Identify bicycle components needing repair, replacement or maintenance according to manufacturer specifications 2.3 Report inspection findings, and identify and confirm service options and techniques for required repairs or adjustments
3. Service bicycle	3.1 Carry out routine servicing and maintenance of bicycle according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.2 Carry out post-service testing and operation checks on serviced bicycle according to manufacturer specifications, and make adjustments as required 3.3 Report results and quality issues to authorised personnel as required
4. Complete work processes	4.1 Clean bicycle, conduct final inspection to ensure work meets workplace expectations, and confirm bicycle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Completes measurements to test electric power-assisted bicycle against manufacturer specifications • Identifies and calculates electric power-assisted bicycle settings and adjustments.
Oral communication	• Asks questions to clarify instructions and requirements.
Problem solving	• Identifies technical and operational faults and defects, quality issues and potential problems associated with electric power-assisted bicycles.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

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Unit Mapping Information

Supersedes and is equivalent to AURBTR001 Service electric power-assisted bicycles.

Links

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Assessment Requirements for AURBTR101 Inspect and service electric power-assisted bicycles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service at least three different electric power-assisted bicycles in which the work for each bicycle involves:
  - battery testing and charging
  - checking operation of controller
  - checking wiring
  - checking connectors at motor plug
  - testing brake cut-outs, throttle and pedal assist sensor (PAS).

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- work health and safety (WHS) requirements relating to inspecting and servicing electric power-assisted bicycles, including procedures for:
  - manually handling bicycles
  - identifying workplace hazards
  - using tools and equipment, including personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- electric power-assisted bicycle terminology
- operating principles of electric power-assisted bicycles, including:
  - throttle response
  - power and performance
  - pedal assist function
  - throttle function

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- function of electric power-assisted bicycle components specified in the range of conditions
- types and use of tools and equipment used to inspect and service electric power-assisted bicycles
- techniques and processes for inspecting and servicing electric power-assisted bicycles, including:
- identification of electric power-assisted bicycle components and specifications, including:
  - hub motor
  - motor connectors and plugs
  - electric controllers
  - battery
  - selection and checking of personal protective equipment
  - fault identification
- bicycle measuring techniques
  - adjustment techniques
  - battery testing and charging
  - checking operation of controller, wiring, and connectors at motor plug
  - testing procedures, including:
  - brake cut-outs
  - throttle
  - pedal assist sensor
- servicing options, including:
  - on- and off-site servicing
  - servicing and adjusting components
  - upgrading components.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electric power-assisted bicycles that they have serviced, e.g. service orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace, including location to test bicycles
- workplace instructions detailing job requirements
- workplace procedures relating to the service of electric power-assisted bicycles
- electric power-assisted bicycle manufacturer specifications

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- PPE required to service electric power-assisted bicycles
- three different electric power-assisted bicycles requiring service and maintenance
- tools and equipment appropriate for servicing electric power-assisted bicycles.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURBTR103 Retrofit electric drivetrain systems to bicycles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to retrofit and modify bicycles with electric drivetrain systems. This unit involves preparing for the task, selecting the tooling, carrying out the retrofit and modification procedures, performing post-modification testing, and completing workplace processes and documentation.

The unit applies to those working in the bicycle industry, including those working in sales, service and repair.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to retrofit system	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret retrofit information, manufacturer specifications, and codes of practice 1.3 Analyse retrofit options and select those required by the circumstances 1.4 Identify hazards and manage risks associated with the work 1.5 Identify, select and check retrofit tools and equipment for serviceability
2. Dismantle system	2.1 Dismantle required components of bicycle according to manufacturer specifications, workplace procedures, and safety

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ELEMENTS	PERFORMANCE CRITERIA
	and environmental requirements, and without causing damage to components or system 2.2 Recover all additional parts of bicycle not required for refit and store for customer
3. Retrofit system	3.1 Access and interpret technical information relating to electric drivetrain system and the donor bicycle being retrofitted 3.2 Carry out electric drivetrain system modification procedures according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Test system for electrical and mechanical functionality according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.4 Calibrate computer control system according to local regulations, laws and manufacturer specifications and workplace procedures 3.5 Carry out post-modification testing according to workplace procedures and check test results to confirm system performance is operating to manufacturer specifications, resolve reported pre-modification issues, and confirm no other faults are present
4. Complete work processes	4.1 Make final inspection to ensure work meets workplace and customer specifications, and present components ready for use 4.2 Clean work area, dispose of waste and non-recyclable materials, and collect and store recyclable material 4.3 Completes workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.

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SKILL	DESCRIPTION
Numeracy	• Matches retrofit options and bicycle specification numbers to kit specifications, workplace instructions, bicycle and component part lists, and code of practice requirements • Interprets readings on digital and analogue testing equipment • Measures output and speed, uses basic mathematical operations including addition and subtraction • Calculates deviations and tolerances from manufacturer specifications.
Oral communication	• Listens to workplace instructions and asks questions to clarify job requirements.
Reading	• Interprets text, symbols and diagrams relating to retrofit and modification information from manufacturer specifications, and workplace instructions and procedures • Interprets key requirements of Australian automotive code of practice relating to retrofitting and modifying bicycles with and electric drivetrain.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

Unit Mapping Information

New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBTR103 Retrofit electric drivetrain systems to bicycles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- retrofit and modify three bicycles with different electric drivetrain systems in which the work must include one of each of the following types of electric drivetrains:
  - a rear wheel drive electric bicycle retrofit kit
  - a front wheel drive electric bicycle retrofit kit
  - a crank drive electric bicycle retrofit kit.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to retrofit electric drivetrain systems to bicycles, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to retrofit electric drivetrain systems to bicycles:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to retrofitting and modifying bicycles with electric drivetrain systems to include procedures for:

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    - working with electric battery technologies and the different risks with each chemistry
    - working with system lubricants
    - selecting and using personal protective equipment (PPE)
- environmental requirements, including procedures for:
    - disposal of dangerous goods and battery technology
    - handling materials and battery recycling protocols
- key requirements of Australian automotive code of practice: calibration and power output restrictions of electric and pedelec bicycles
- application, purpose and operation of retrofit electric bicycle systems and components, including:
    - wheel drive and crank drive kits
    - different battery chemistry, including:
        - lithium ion
        - lithium ion polymer
        - lithium cobalt
        - lithium manganese
        - lead acid
- procedures for identifying and repairing wiring looms
- procedures for routing cables and positioning looms
- procedures for mounting equipment, including:
    - battery packs
    - crank sets
    - brake levers
    - control units
    - wiring harnesses
    - wheel sets
- procedures for retrofitting and modifying electric bicycles, including:
    - determining original system fitted to the bicycle, including drive type and battery chemistry
    - determining retrofit and modification options, including:
        - determining required system performance output
        - appropriate retrofit kit type
        - component replacement, including battery, harness and controller
    - procedures for removing and replacing existing system components
- procedures for testing bicycle electrical drivetrain kit, including:
    - testing electrical faults with a digital multimeter
    - calibrating system controller to applicable standards
    - ensuring maximum bicycle speed is set according to standards.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the retrofit of electric drivetrain systems to bicycles.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace, including location to test bicycle electronic drivetrain systems
- workplace instructions detailing job requirements
- manufacturer fitting instructions and specifications
- PPE required to install and adjust electric drivetrain systems
- bicycle electric drivetrain systems
- three different bicycles requiring the installation and adjustment of electric drivetrain systems
- tools and equipment appropriate for installing and adjusting electric drivetrain systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURBTR104 Diagnose and repair electric bicycles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in electric bicycles. This unit involves preparing for the work, selecting and using specialist tools and equipment, diagnosing the bicycle condition, interpreting manufacturer specifications, performing repairs and testing on electric bicycle components, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry. Electric power-assisted bicycles are throttle and pedal assist sensor (PAS) bicycles with 250 watts rated power at the wheel.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Bicycle Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair electric bicycle	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret diagnostic information 1.3 Analyse diagnostic options and source testing strategy, selecting those required by the circumstances 1.4 Identify hazards and manage risks associated with the work 1.5 Select and check diagnostic tools and equipment required by testing strategy for serviceability
2. Diagnose electric	2.1 Carry out diagnostic tests according to workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
bicycle system	and safety requirements without causing damage to components or systems 2.2 Identify faults from diagnostic test results and determine causes of faults 2.3 Confirm and report diagnosis findings and develop recommendations for required repairs or adjustments according to workplace procedures
3. Repair electric bicycle system	3.1 Source and interpret repair information 3.2 Analyse and select repair options required by the circumstances 3.3 Check and select repair tools, equipment and materials 3.4 Carry out repairs and component replacements and adjustments according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.5 Carry out post-repair testing according to workplace procedures to confirm fault rectification, and rectify any further problems introduced during the repair process
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm bicycle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Locates required sources of information efficiently.
Numeracy	• Matches electric bicycle system components and identification numbers to workplace instructions, bicycle and component part lists, and manufacturer specifications • Interprets electric bicycle drivetrain and control system voltages and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations and tolerances from manufacturer

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Skill	Description
	specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Interprets text, symbols and wiring diagrams in information relating to electric bicycle drivetrain system testing and repair equipment from manufacturer specifications and workplace instructions and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised equipment in line with workplace procedures.

Unit Mapping Information

New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBTR104 Diagnose and repair electric bicycles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the electric drivetrain system of two different electric bicycles, each time repairing a different fault from the following:
  - wheel speed sensor
  - charging system
  - battery pack
  - wiring harness and connectors
  - electric motor
  - controller.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair electric bicycles, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair electric bicycles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- work health and safety (WHS) requirements relating to diagnosing and repairing electric bicycles, including procedures for:
    - using specialised tools and equipment, including multimeters
    - using appropriate personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with:
        - working on high voltage electric drivetrain systems
        - wearing jewellery while working around high current wiring systems
- operating principles of electric bicycles and associated components, including:
    - generating principles, including Faraday's law and inducing an electromotive force (EMF)
- application, purpose and operation of electric bicycle systems and components, including:
    - battery packs:
        - chemistry and associated hazards and risks associated with each type
        - mounting and securing battery packs
    - electric drive motors:
        - brushless electric motors
        - brushed electric motors
        - wiring connectors
    - electric controllers:
        - interface display units
        - adjustment and calibration requirements
        - harness connections
    - wiring harnesses:
        - mounting and routing of wiring harnesses
        - continuity of electrical system
        - wiring gauges and capacity
        - measuring voltage, resistance and current across two points
    - throttle control systems
- diagnostic testing procedures for electric bicycle drivetrain systems, including:
    - using diagnostic flow charts
    - testing electrical systems, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - checking resistance, current flow and voltage drop of electric bicycle driveline system circuits
        - electric motors
- repair procedures for electric bicycle systems, including:
    - removing and replacing faulty or damaged components
    - adjusting bicycle control system speed restrictors

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  - removing and replacing electric motors and batteries
- post-repair testing procedures for electric bicycles, including static and dynamic performance tests of electric bicycle.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electric bicycles that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions
- manufacturer electric bicycle specifications
- two different bicycles with electric driveline system faults
- diagnostic equipment for electric bicycle systems, including:
  - multimeter
  - tools, equipment and materials appropriate for repairing electric bicycle driveline systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURBTV101 Remove, refit and adjust bicycle accessories

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove, refit and adjust electrical and non-electrical bicycle accessories. The unit involves preparing for the work, selecting and using specialist tools and equipment, inspecting, removing and replacing bicycle accessories according to fitting instructions and manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Bicycle Technical - Accessories

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove, refit and adjust bicycle accessories	1.1 Determine job requirements from workplace instructions 1.2 Interpret bicycle accessory removal and fitting instructions and check accessory specifications against customer requirements 1.3 Inspect accessories for quality and compare with customer requirements 1.4 Identify hazards associated with the work and manage risks 1.5 Select and check tools and equipment for serviceability 1.6 Prepare work area and plan work to avoid damage to bicycle, minimise waste and use time efficiently

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ELEMENTS	PERFORMANCE CRITERIA
2. Remove accessories	2.1 Identify and check accessories to be removed or repaired according to manufacturer specifications 2.2 Remove accessories in line with planned sequence according to workplace instructions and without causing damage to bicycle frame, other components and accessories
3. Fit, test and adjust accessories	3.1 Determine required positioning of new or repaired accessories regard to operational requirements, aesthetics and customer requirements 3.2 Refit bicycle accessories according to job requirements, workplace procedures, and safety and environmental requirements 3.3 Test and adjust refitted accessories as required according to job requirements and customer requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm bicycle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Completes measurements for accessory fitting.
Oral communication	• Asks questions to clarify instructions and requirements, including with customers.
Technology	• Uses specialist bicycle tools and equipment in line with workplace procedures.

Unit Mapping Information

Supersedes and is equivalent to AURBTV001 Remove, refit and adjust bicycle accessories.

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Assessment Requirements for AURBTV101 Remove, refit and adjust bicycle accessories

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove, refit and adjust the following bicycle accessories on different bicycles:
  - at least one bicycle computer
  - at least two different accessories from the following:
    - seat
    - bicycle carrier
    - pedals water bottle frame.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove, refit and adjust bicycle accessories, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to remove, refit and adjust bicycle accessories, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to removing, refitting and adjusting bicycle accessories, including procedures for:
  - manually handling bicycles
  - identifying workplace hazards
  - using materials, tools and equipment, including personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- key bicycle and accessory terminology
- purpose of bicycle accessories and their relationship to safe bicycle use
- types and key features of bicycle accessories, including:
  - bicycle computers
  - seats
  - bicycle carriers
  - pedals
  - water bottle frames
- types and use of tools and equipment used to remove, refit and adjust bicycle accessories
- techniques and processes for removing, refitting and adjusting bicycle accessories, including:
  - selection and checking of personal protective equipment
  - fitting instructions
  - fault identification
  - removal instructions
  - measuring techniques
  - adjustment techniques
  - testing procedures.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle accessories that they have removed, refitted and adjusted, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions detailing job requirements
- technical specifications and fitting instructions for bicycle accessories
- PPE required to remove, refit and adjust bicycle accessories
- range of accessories specified in the performance evidence to be fitted on bicycles

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- three different bicycles requiring accessories
- tools and equipment appropriate for removing, refitting and adjusting bicycle accessories.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETB101 Diagnose and repair electric braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair electric braking systems. These systems are single wire (non CAN-bus) circuits and include electric braking systems in light vehicles and machinery fitted with electric trailer braking controllers or trailers fitted with electric brakes. The systems used vary based on the work context. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The electric braking systems include those in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Brakes

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair electric braking system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and

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ELEMENT	PERFORMANCE CRITERIA
	implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose electric braking system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair electric braking system	3.1 Identify required information for repair activity 3.2 Identify required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electric braking system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches electric braking system components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electric braking measurements and readings • Measures voltage, current and resistance and use mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURETB001 Diagnose and repair electric braking systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETB101 Diagnose and repair electric braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least one of the following components in the electrical non CAN-bus networked braking system of at least two different vehicles or machinery:
  - brake controller
  - circuit protection device
  - switch, relay or globe
  - sensor
  - actuator.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- techniques for reading and interpreting technical information, including circuit types, diagrams and symbols
- methods to locate and interpret information required to diagnose and repair electric braking systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair electric braking systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing electric braking systems, including procedures for:
    - using specialised tools and equipment
    - using appropriate personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with working on vehicle high voltage ignition systems, including:
        - wearing jewellery while working around high current wiring systems
- environmental requirements relating to diagnosing and repairing electric braking systems
- electrical principles, including:
    - current, voltage, resistance and power
    - identification and operation of simple electrical circuits, including:
        - series circuits
        - parallel circuits
        - series parallel circuits
    - Ohm’s law
    - Faraday’s law
    - Kirchhoff’s law
    - electromagnetic interference and radiation
- purpose and operation of electric braking systems and components, including:
    - control systems, including:
        - electric over hydraulic
        - electric over vacuum
    - circuit protection devices
    - switches, relays and globes, including light emitting diodes (LEDs)
    - cable types and sizes and current carrying capacity
    - sensors (two and three-wire)
    - actuators, including pulse width modulated (PWM)
- diagnostic testing procedures for electric braking systems, including:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - waveforms
    - using diagnostic flow charts
- testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - resistance and voltage drop tests
    - open and short circuit tests

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  - checking shorts to signal, power circuits and grounds
- visual, aural and functional assessments of electric braking system components, including:
  - component damage and wear
  - component or connector corrosion
  - component water or moisture ingress
- repair procedures for electric braking systems, including procedures for removing and replacing:
  - brake controllers
  - electric drum brakes
  - electric disc brakes
  - electric braking system wiring and connectors
- post-repair testing procedures for electric braking systems, including:
  - DTC clearing procedures
  - static and dynamic performance tests of steering system.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment includes third-party evidence, individuals must provide evidence that links them to the electric braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer electric braking system specifications
- two different vehicles or machinery with electric braking system faults
- diagnostic equipment for electric braking systems, including scan tool
- tools, equipment and materials appropriate for repairing vehicle and machinery electric braking systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETD101 Diagnose and repair electronically controlled steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair electronically controlled steering systems. These systems include two-wire high and low speed (CAN-bus) and single wire low speed (LIN-bus) networked circuits in the embedded network electronic control system of a vehicle or machinery. The systems used vary based on the work context. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The electronically controlled steering systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, motorcycles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Steering and Suspension

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair electronically controlled steering system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose electronically controlled steering system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair electronically controlled steering system	3.1 Identify required information for repair activity 3.2 Identify required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task

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SKILL	DESCRIPTION
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electronically controlled steering system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches electronically controlled steering system components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electronically controlled steering measurements and readings • Measures voltage, current and resistance and use mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURETD011 Diagnose and repair electronically controlled steering systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETD101 Diagnose and repair electronically controlled steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair at least two of the following faults in electronically controlled steering system components of two different vehicles or machinery:
  - steering wheel torque sensor circuit
  - steering wheel angle sensor circuit
  - wheel speed sensor circuit
  - ultrasonic position sensor self-parking system circuit
  - power steering motor control circuit
  - power steering hydraulic pump control circuit.
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - high resistance in an input system
  - damaged circuits.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair electronically controlled steering systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair electronically controlled steering systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures

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  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing electronically controlled steering systems, including procedures for:
  - using specialised tools and equipment
  - using appropriate personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with working with high pressure and high temperature steering systems
- environmental requirements relating to diagnosing and repairing electronically controlled steering systems
- principles of electronically controlled steering systems and associated components, including:
  - adaptive steering topography, inputs and outputs
  - typical vehicle or machinery equipped with electronically controlled steering systems
- purpose and operation of electronically controlled steering systems and components, including:
  - adaptive steering control module
  - control sensors and actuators
  - actuators, including pulse width modulated (PWM)
  - steering control module functions, including:
    - control of hydraulic fluid settings
    - pressure control valve settings
    - power steering pump operation
- diagnostic testing procedures for electronically controlled steering systems, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - waveforms
  - using diagnostic flow charts
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - resistance and voltage drop tests
    - open and short circuit tests
    - checking shorts to signal, power circuits and grounds
- repair procedures for electronically controlled steering systems, including procedures for removing and replacing system components

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- post-repair testing procedures for electronically controlled steering systems, including:
  - DTC clearing procedures
  - static and dynamic performance tests of steering system.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electronically controlled steering systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for electronically controlled steering systems
- two different vehicles or machinery with faults in the electronically controlled steering system components specified in the performance evidence
- diagnostic equipment for electronically steering controlled system, including:
  - multimeter
  - scan tool
- tools, equipment and materials appropriate for repairing the electronically controlled steering systems of vehicle and machinery.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH101 Depower and reinitialise battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to depower and reinitialise battery electric vehicles (BEVs). It involves ensuring the vehicle high voltage (HV) rechargeable energy storage system (RESS) is isolated before commencing any service or repair work. It also involves calibrating vehicle systems that may need resetting once the energy storage system is reinitialised. Importance is placed in the unit on applying RESS and separated extra low voltage (SELV) electrical safety procedures.

The unit applies to those who work in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Hybrid Vehicle and Battery Vehicle

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to depower and reinitialise BEV	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for servicing activity 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for servicing activity and establish serviceability according to workplace procedures
2. Deactivate vehicle RESS	2.1 Locate and disconnect SELV supply according to

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ELEMENT	PERFORMANCE CRITERIA
	manufacturer specifications 2.2 Locate and remove RESS service plug or manual service disconnect to depower vehicle HV RESS according to manufacturer specifications 2.3 Stabilise vehicle is stabilised ensure zero residual voltage according to manufacturer procedures 2.4 Secure and retain RESS service plug or manual service disconnect to prevent refitting by third party
3. Reinitialise vehicle RESS	3.1 Reconnect SELV and RESS service plug or manual service disconnect in the correct order and reactivate vehicle 3.2 Carry out diagnostic tests to ensure correct recalibration of subsystems affected by depower process according to manufacturer procedures 3.3 Check RESS and vehicle subsystems for correct operation 3.4 Report post-reactivation faults according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets text, symbols and diagrams in depowering and reinitialising information in manufacturer specifications, and workplace instructions and procedures
Oral communication	• Listens to workplace instructions and ask questions to clarify job requirements • Participates in verbal exchanges when depowering and reinitialising BEVs
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and

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SKILL	DESCRIPTION
	manufacturer specifications • Interprets vehicle electrical measurements and readings on digital and analogue gauges • Interprets measurements of residual voltage and high voltages relating to BEVs
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Problem solving	• Identifies faults in reinitialising process that need to be reported
Technology	• Uses specialised tools

Unit Mapping Information

Supersedes and is equivalent to AURETH001 Depower and reinitialise battery electric vehicles.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH101 Depower and reinitialise battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- safely depower the rechargeable energy storage system (RESS) and separated extra low voltage (SELV) system of two different battery electric vehicles (BEVs), and stabilise the vehicles ensuring that no residual high voltage (HV) is measured
- safely reinitialise each BEV's RESS and SELV system and confirm correct vehicle operation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to depower and reinitialise battery electric vehicles, including:
  - vehicle manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to depower and reinitialise battery electric vehicles, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to depowering and reinitialising BEVs, including procedures for:
  - identifying hazards and controlling risks associated with:

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    - working with high voltages on BEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
    - identifying and using firefighting equipment as appropriate
    - using the 'one hand' rule
    - following live system warning tags and signs
    - depowering vehicle
    - isolating HV RESS electrical supply
    - stabilising vehicle electrical system
- requirements of AS 5732 Electric vehicle operations - Maintenance and repair
- operating principles of RESS and SELV electrical systems relevant to a range of BEVs
- purpose and operation of a range of vehicle RESS depowering and reinitialising methods.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEVs that they have depowered and reinitialised e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
- manufacturer specifications and service procedures for the BEVs being depowered and reinitialised
- AS 5732 Electric vehicle operations - Maintenance and repair
- two different BEVs as specified in the performance evidence
- electrical test equipment, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
  - scan tool
- tools, equipment and materials appropriate for depowering and reinitialising BEVs.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETH103 Diagnose and repair high voltage rechargeable energy storage systems in battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the high voltage (HV) rechargeable energy storage systems (RESS) of battery electric vehicles (BEVs).

The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on HV RESS.

The unit applies to those who work in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

AURETH101 Depower and reinitialise battery electric vehicles

Unit Sector

Electrical Technical – Hybrid Vehicle and Battery Vehicle

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair high voltage rechargeable	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity

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ELEMENT	PERFORMANCE CRITERIA
energy storage systems in battery electric vehicle	1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose rechargeable energy storage systems in battery electric vehicle	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair rechargeable energy storage systems in battery electric vehicle	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Isolate RESS service plug or manual service disconnect and depower vehicle HV RESS according to manufacturer specifications 3.4 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.5 Reconnect RESS service plug or manual service disconnect and repower vehicle HV RESS 3.6 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets symbols and wiring diagrams
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings on digital and analogue gauges • Measures voltage, current and resistance • Uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised tools.

Unit Mapping Information

Supersedes and is equivalent to AURETH003 Diagnose and repair high voltage rechargeable energy storage systems in battery electric vehicles.

Links

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Assessment Requirements for AURETH103 Diagnose and repair high voltage rechargeable energy storage systems in battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair high voltage (HV) rechargeable energy storage systems (RESS) in at least two different battery electric vehicles (BEVs) to correct at least one of the following performance deficiencies in each:
  - high resistance in an input system
  - component failure
  - abnormal or irregular noises.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair high voltage rechargeable energy storage systems in battery electric vehicles, including:
  - information provided by customers and supervisors
  - Australian Standards (AS) 5732 Electric vehicle operations - Maintenance and repair
  - manufacturer specifications and procedures
- workplace procedures required to diagnose and repair high voltage rechargeable energy storage systems in battery electric vehicles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing high voltage rechargeable energy storage systems in battery electric vehicles, including procedures for:
    - identifying hazards and controlling risks associated with:
        - working with high voltages in BEV electrical systems
        - wearing jewellery while working around high electrical currents
    - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
        - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
        - identifying and using firefighting equipment
        - using the one hand rule
        - following live system warning tags and signs
        - depowering vehicle
        - isolating HV RESS electrical supply
        - stabilising vehicle electrical system
- environmental requirements relating to diagnosing and repairing high voltage rechargeable energy storage systems in battery electric vehicles, including procedures for trapping, storing and disposing of waste produced during repair.
- safe operating procedures for tools and equipment, including:
    - digital multimeter with Cat III 1000 volt rating
    - insulation tester
    - residual voltage tester
    - scan tool
    - oscilloscope
- operating principles of high voltage rechargeable energy storage systems in battery electric vehicles, including:
    - battery pack construction, including:
        - battery types
        - battery internal resistance
    - battery pack system, including:
        - charging characteristics
        - open circuit cells
        - reverse polarisation
        - series cell configuration
        - strapping and layout
- purpose and operation of high voltage rechargeable energy storage systems in battery electric vehicles and components, including:
    - HV battery charger and direct current (DC) to DC converter

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  - battery management system (BMS)
  - power distribution unit (PDU)
- diagnostic testing procedures for high voltage rechargeable energy storage systems in battery electric vehicles, including procedures for:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - freeze frame data
    - waveforms
  - using diagnostic flow charts
  - electrical system testing, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - testing controller input and output signals and waveforms
    - vehicle dynamic and static testing procedures
    - analysing abnormal noise
    - analysing component failure
  - RESS cooling system testing
- repair procedures for high voltage rechargeable energy storage systems in battery electric vehicles, including procedures for:
  - tightening connections
  - replacing faulty or damaged cable connections
  - removing and replacing faulty or damaged components
  - removing and replacing motor controller
- post-repair testing procedures for high voltage rechargeable energy storage systems in battery electric vehicles, including procedures for:
  - DTC clearing procedures
  - checking for electrical connector mating
  - performance testing RESS.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the RESS in BEVs that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- PPE, including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
- manufacturer specifications for BEV and RESS
- AS 5732 Electric vehicle operations - Maintenance and repair
- two different BEVs with RESS and associated components accessible for diagnosis and repair or replacement activities
- electrical diagnostic equipment appropriate to the BEV being diagnosed and repaired, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - residual voltage tester, if specified in original equipment manufacturer (OEM) specifications
  - scan tool
  - oscilloscope
- tools, equipment and materials appropriate for repairing BEV RESS and their components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH104 Diagnose and repair traction motor speed control systems in battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the traction motor speed control systems of battery electric vehicles (BEVs). These systems may be referred to as digital motor controllers (DMCs) or motor control units (MCUs). The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) rechargeable energy storage systems (RESS).

The unit applies to those who work in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Hybrid Vehicle and Battery Vehicle

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair traction motor speed control system in battery electric vehicle	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose traction motor speed control system in battery electric vehicle	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair traction motor speed control system in battery electric vehicle	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Isolate RESS service plug or manual service disconnect and depower vehicle HV RESS according to manufacturer specifications 3.4 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.5 Reconnect RESS service plug or manual service disconnect and repower vehicle HV RESS 3.6 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace

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SKILL	DESCRIPTION
	procedures, manufacturer procedures and manufacturer specifications • Interprets symbols and wiring diagrams.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings on digital and analogue gauges • Measures voltage, current and resistance • Uses mathematical operations • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised tools.

Unit Mapping Information

Supersedes and is equivalent to AURETH004 Diagnose and repair traction motor speed control systems in battery electric vehicles.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH104 Diagnose and repair traction motor speed control systems in battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair traction motor speed control systems and associated components on two different battery electric vehicles (BEVs) to correct at least one of the following performance deficiencies in each:
  - high resistance in an input system
  - component failure
  - abnormal or irregular noises.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair traction motor speed control systems in battery electric vehicles, including:
  - information provided by customers and supervisors
  - Australian Standards AS 5732 Electric vehicle operations - Maintenance and repair
  - manufacturer specifications and procedures
- workplace procedures required to diagnose and repair traction motor speed control systems in battery electric vehicles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing traction motor speed control systems in battery electric vehicles, including procedures for:
    - identifying hazards and controlling risks associated with:
        - working with high voltages in BEV electrical systems
        - wearing jewellery while working around high electrical currents
    - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
        - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
        - identifying and using firefighting equipment
        - using the one hand rule
        - following live system warning tags and signs
        - depowering vehicle
        - isolating HV RESS electrical supply
        - stabilising vehicle electrical system
- environmental requirements relating to diagnosing and repairing traction motor speed control systems in battery electric vehicles, including procedures for trapping, storing and disposing of waste produced during repair.
- safe operating procedures for tools and equipment, including:
    - digital multimeter with Cat III 1000 volt rating
    - insulation tester
    - residual voltage tester
    - scan tool
    - oscilloscope
- operating principles of traction motor speed control systems in battery electric vehicles, including:
    - types of batteries
    - types of traction motors, including alternating current and direct current
    - types of motor controllers
    - battery charging
- purpose and operation of traction motor speed control systems in battery electric vehicles and components, including:
    - controller inputs
    - resolvers
    - controller outputs
    - battery interface
- diagnostic testing procedures for traction motor speed control systems in battery electric vehicles, including procedures for:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)

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    - live data
    - freeze frame data
  - using diagnostic flow charts
  - electrical system testing, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - testing controller input and output signals and waveforms
    - vehicle dynamic and static testing procedures
    - analysing abnormal noise
    - analysing component failure
  - motor speed controller cooling system testing
- repair procedures for traction motor speed control systems in battery electric vehicles, including procedures for:
  - tightening connections
  - replacing faulty or damaged cable connections
  - removing and replacing faulty or damaged components
  - removing and replacing motor controller
- post-repair testing procedures for traction motor speed control systems in battery electric vehicles, including procedures for:
  - DTC clearing procedures
  - checking for electrical connector mating
  - static and dynamic performance tests of traction motors.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEV traction motor speed control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating
- manufacturer specifications for BEV traction motor speed control systems
- AS 5732 Electric vehicle operations: Maintenance and repair
- two different BEVs with traction motor speed control systems accessible for diagnosis and repair or replacement activities

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- electrical diagnostic equipment appropriate to the BEV being diagnosed and repaired, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - scan tool
  - oscilloscope
  - residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
- tools, equipment and materials appropriate for repairing high voltage traction motors in BEVs.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETH105 Diagnose and repair high voltage traction motors in battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the high voltage traction motors of battery electric vehicles (BEVs). The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) rechargeable energy storage systems (RESS).

The unit applies to those who work in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Hybrid Vehicle and Battery Vehicle

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair high voltage traction motor in battery electric vehicle	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and

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ELEMENT	PERFORMANCE CRITERIA
	establish serviceability according to workplace procedures
2. Diagnose high voltage traction motor in battery electric vehicle	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair high voltage traction motor in battery electric vehicle	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Isolate RESS service plug or manual service disconnect and depower vehicle HV RESS according to manufacturer specifications 3.4 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.5 Reconnect RESS service plug or manual service disconnect and repower vehicle HV RESS 3.6 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer

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SKILL	DESCRIPTION
	specifications • Interprets symbols and wiring diagrams
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings on digital and analogue gauges • Measures voltage, current and resistance • Uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised tools

Unit Mapping Information

Supersedes and is equivalent to AURETH005 Diagnose and repair high voltage traction motors in battery electric vehicles.

Links

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Assessment Requirements for AURETH105 Diagnose and repair high voltage traction motors in battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair high voltage (HV) traction motors systems and associated components on at least two different battery electric vehicles (BEVs) to correct at least one of the following performance deficiencies in each:
  - damaged or faulty cabling
  - component failure
  - damaged tractor motor windings.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair high voltage traction motors in battery electric vehicles, including:
  - information provided by customers and supervisors
  - Australian Standards AS 5732 Electric vehicle operations - Maintenance and repair
  - manufacturer specifications and procedures
- workplace procedures required to diagnose and repair high voltage traction motors in battery electric vehicles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing high voltage traction motors in battery electric vehicles, including procedures for:
    - identifying hazards and controlling risks associated with:
        - working with high voltages in BEV electrical systems
        - wearing jewellery while working around high electrical currents
    - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
        - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
        - identifying and using firefighting equipment
        - using the one hand rule
        - following live system warning tags and signs
        - depowering vehicle
        - isolating HV RESS electrical supply
        - stabilising vehicle electrical system
- environmental requirements relating to diagnosing and repairing high voltage traction motors in battery electric vehicles, including procedures for trapping, storing and disposing of waste produced during repair.
- safe operating procedures for tools and equipment, including:
    - digital multimeter with Cat III 1000 volt rating
    - insulation tester
    - residual voltage tester
    - scan tool
    - oscilloscope
- operating principles of high voltage traction motors in battery electric vehicles, including:
    - motor generators
    - types of batteries
    - battery charging
- purpose and operation of high voltage traction motors in battery electric vehicles and components, including:
    - direct current (DC) motor generators
    - alternating current (AC) motor generators
- diagnostic testing procedures for high voltage traction motors in battery electric vehicles, including procedures for:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - freeze frame data
    - using diagnostic flow charts
    - electrical system testing, including procedures for:

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    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - determining damage to traction motor windings
    - checking insulation resistance of traction motor windings
    - checking routing and damage to HV cabling
    - conducting vehicle dynamic and static tests
    - analysing abnormal noise
    - analysing component failure
- repair procedures for high voltage traction motors in battery electric vehicles, including procedures for:
    - tightening connections
    - replacing faulty or damaged cable connections
    - removing and replacing faulty or damaged components
    - removing and replacing the traction motor
- post-repair testing procedures for high voltage traction motors in battery electric vehicles, including procedures for:
    - DTC clearing procedures
    - checking for electrical connector mating
    - static and dynamic performance tests of traction motors.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEV HV traction motors that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and high voltage (HV) insulating mat with Australian standards rating
- manufacturer specifications for BEV HV traction motor systems
- AS 5732 Electric vehicle operations: Maintenance and repair
- two different BEVs with HV traction motor systems accessible for diagnosis and repair or replacement activities
- electrical diagnostic equipment appropriate to the BEV being diagnosed and repaired, including:
    - digital multimeter with Cat III 1000 volt rating

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  - insulation tester
  - scan tool
  - oscilloscope
  - residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
- tools, equipment and materials appropriate for repairing HV traction motors in BEVs.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETH106 Diagnose and repair auxiliary motors and associated components in battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the auxiliary motors of battery electric vehicles (BEVs), and in their associated components and control systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) rechargeable energy storage systems (RESS).

The unit applies to those who work in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

AURETH101 Depower and reinitialise battery electric vehicles

Unit Sector

Electrical Technical – Hybrid Vehicle and Battery Vehicle

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair auxiliary motors and associated	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify

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ELEMENT	PERFORMANCE CRITERIA
components in battery electric vehicle	cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose auxiliary motors and associated components in battery electric vehicle	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair auxiliary motors and associated components in battery electric vehicle	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Isolate RESS service plug or manual service disconnect and depower vehicle HV RESS according to manufacturer specifications 3.4 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.5 Reconnect RESS service plug or manual service disconnect and repower vehicle HV RESS 3.6 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets symbols and wiring diagrams.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings on digital and analogue gauges • Measures voltage, current and resistance • Uses mathematical operations • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised tools.

Unit Mapping Information

Supersedes and is equivalent to AURETH006 Diagnose and repair auxiliary motors and associated components in battery electric vehicles.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH106 Diagnose and repair auxiliary motors and associated components in battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair auxiliary motors, associated components and control systems in at least two different battery electric vehicles (BEVs) to correct at least one of the following performance deficiencies in each:
  - high resistance in an input system
  - component failure
  - faulty or damaged cable connections.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair auxiliary motors and associated components in battery electric vehicles, including:
  - information provided by customers and supervisors
  - AS 5732 Electric vehicle operations - Maintenance and repair
  - manufacturer specifications and procedures
- workplace procedures required to diagnose and repair auxiliary motors and associated components in battery electric vehicles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing auxiliary motors and associated components in battery electric vehicles, including procedures for:
    - identifying hazards and controlling risks associated with:
        - working with high voltages in BEV electrical systems
        - wearing jewellery while working around high electrical currents
    - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
        - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
        - identifying and using firefighting equipment
        - using the one hand rule
        - following live system warning tags and signs
        - depowering vehicle
        - isolating HV RESS electrical supply
        - stabilising vehicle electrical system
- environmental requirements relating to diagnosing and repairing auxiliary motors and associated components in battery electric vehicles, including procedures for trapping, storing and disposing of waste produced during repair.
- safe operating procedures for tools and equipment, including:
    - digital multimeter with Cat III 1000 volt rating
    - insulation tester
    - residual voltage tester
    - scan tool
    - oscilloscope
- operating principles of auxiliary motors and associated components in battery electric vehicles, including:
    - electric-assisted power steering
    - electric-assisted braking
    - electric-assisted passenger comfort systems, including heating, cooling and air conditioning (HVAC) systems
- diagnostic testing procedures for auxiliary motors and associated components in battery electric vehicles, including procedures for:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - freeze frame data
    - using diagnostic flow charts
    - electrical system testing, including procedures for:

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    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - testing motor controller input and output signals and waveforms
    - testing auxiliary motor operation
    - analysing abnormal noise
    - analysing component failure
- repair procedures for auxiliary motors and associated components in battery electric vehicles, including procedures for:
    - tightening connections
    - replacing faulty or damaged cable connections
    - removing and replacing faulty or damaged components
    - removing and replacing the auxiliary motor and controllers
- post-repair testing procedures for auxiliary motors and associated components in battery electric vehicles, including procedures for:
    - DTC clearing procedures
    - checking for electrical connector mating
    - performance tests of auxiliary motor system.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEV auxiliary motors and associated components that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and high voltage (HV) insulating mat with Australian standards rating
- manufacturer specifications for BEV auxiliary motors and subsystems
- AS 5732 Electric vehicle operations: Maintenance and repair
- two different BEVs with auxiliary motors and associated components accessible for diagnosis and repair or replacement activities
- electrical diagnostic equipment appropriate to the BEV being diagnosed and repaired, including:
    - digital multimeter with Cat III 1000 volt rating
    - insulation tester
    - scan tool

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  - oscilloscope
  - residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
- tools, equipment and materials appropriate for repairing BEV auxiliary motors and their components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETH107 Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the system instrumentation and safety interlocks of battery electric vehicles (BEVs). The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) rechargeable energy storage systems (RESS).

The unit applies to those who work in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

AURETH101 Depower and reinitialise battery electric vehicles

Unit Sector

Electrical Technical – Hybrid Vehicle and Battery Vehicle

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair system instrumentation and safety interlocks in	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures

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ELEMENT	PERFORMANCE CRITERIA
battery electric vehicle	1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose system instrumentation and safety interlocks in battery electric vehicle	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair system instrumentation and safety interlocks in battery electric vehicle	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Isolate RESS service plug or manual service disconnect and depower vehicle HV RESS according to manufacturer specifications 3.4 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.5 Reconnect RESS service plug or manual service disconnect and repower vehicle HV RESS 3.6 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets symbols and wiring diagrams.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings on digital and analogue gauges • Measures voltage, current and resistance • Uses mathematical operations • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised tools.

Unit Mapping Information

Supersedes and is equivalent to AURETH007 Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH107 Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair system instrumentation and safety interlocks and their associated components on at least two different battery electric vehicles (BEVs) to correct at least one of the following performance deficiencies in each:
  - high resistance in an input system
  - faulty instrumentation or safety interlocks
  - damaged or loose connectors, fuse holders or wiring.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair system instrumentation and safety interlocks in battery electric vehicles, including:
  - information provided by customers and supervisors
  - Australian Standards (AS) 5732 Electric vehicle operations - Maintenance and repair
  - manufacturer specifications and procedures
- workplace procedures required to diagnose and repair system instrumentation and safety interlocks in battery electric vehicles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing system instrumentation and safety interlocks in battery electric vehicles, including procedures for:
    - identifying hazards and controlling risks associated with:
        - working with high voltages in BEV electrical systems
        - wearing jewellery while working around high electrical currents
    - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
        - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
        - identifying and using firefighting equipment
        - using the one hand rule
        - following live system warning tags and signs
        - depowering vehicle
        - isolating HV RESS electrical supply
        - stabilising vehicle electrical system
- environmental requirements relating to diagnosing and repairing system instrumentation and safety interlocks in battery electric vehicles, including procedures for trapping, storing and disposing of waste produced during repair.
- safe operating procedures for tools and equipment, including:
    - digital multimeter with Cat III 1000 volt rating
    - insulation tester
    - residual voltage tester
    - scan tool
    - oscilloscope
- operating principles of system instrumentation and safety interlocks in battery electric vehicles, including reasons for safety interlocks in BEVs
- purpose and operation of BEV instrumentation and safety interlocks, including:
    - battery charger, including charge cable sensor
    - controller signals
    - gear selector inhibitor switch
    - ignition or power key
    - inertia or impact sensor
    - isolation componentry, including HV contactor
    - motor over temperature control
    - under voltage protection
- diagnostic testing procedures for system instrumentation and safety interlocks in battery electric vehicles, including procedures for:
    - accessing and interpreting scan tool system data, including:

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    - diagnostic trouble codes (DTCs)
    - live data
  - using diagnostic flow charts
  - electrical system testing, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - determining battery state of charge
    - operational tests of safety interlocks
    - testing instrumentation data communication systems using scan tool and oscilloscope
    - undertaking vehicle dynamic and static tests
- repair procedures for system instrumentation and safety interlocks in battery electric vehicles, including procedures for:
  - tightening connections
  - replacing faulty or damaged cable connections
  - removing and replacing faulty or damaged components
  - removing and replacing instrumentation
- post-repair testing procedures for system instrumentation and safety interlocks in battery electric vehicles, including procedures for:
  - DTC clearing procedures
  - checking for electrical connector mating.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEV system instrumentation and safety interlocks that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating
- manufacturer specifications for BEV system instrumentation and safety interlocks
- AS 5732 Electric vehicle operations: Maintenance and repair
- two different BEVs with system instrumentation and safety interlocks accessible for diagnosis and repair or replacement activities

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- electrical diagnostic equipment appropriate to the BEV being diagnosed and repaired, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - scan tool
  - oscilloscope
  - residual voltage tester, if specified in OEM requirements
- tools, equipment and materials appropriate for repairing system instrumentation and safety interlocks in BEVs.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH108 Diagnose and repair HVAC and rechargeable energy storage cooling systems in battery electric vehicle

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the heating, ventilation and air conditioning (HVAC) and rechargeable energy storage cooling systems of battery electric vehicles (BEVs). The unit involves removing and replacing refrigerant, as well as performance testing the HVAC and RESS cooling system. It involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) rechargeable energy storage systems (RESS).

The unit applies to those who work in the automotive service and repair industry. HVAC and RESS cooling systems include circuits in BEVs.

Licensing requirements apply to this unit. Users are advised to check with the relevant regulatory authority.

Pre-requisite Unit

AURETH101 Depower and reinitialise battery electric vehicles

Unit Sector

Electrical Technical – Hybrid Vehicle and Battery Vehicle

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and	1.1 Identify job requirements from workplace instructions

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ELEMENT	PERFORMANCE CRITERIA
repair HVAC and rechargeable energy storage cooling systems in battery electric vehicle	1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose HVAC and rechargeable energy storage cooling systems in battery electric vehicle	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair HVAC and rechargeable energy storage cooling systems in battery electric vehicle	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Isolate RESS service plug or manual service disconnect and depower vehicle HV RESS according to manufacturer specifications 3.4 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.5 Reconnect RESS service plug or manual service disconnect and repower vehicle HV RESS 3.6 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets symbols and wiring diagrams.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings on digital and analogue gauges • Measures voltage, current and resistance • Uses mathematical operations • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised tools.

Unit Mapping Information

Supersedes and is equivalent to AURETH008 Diagnose and repair HVAC and rechargeable energy storage cooling systems in battery electric vehicle.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH108 Diagnose and repair HVAC and rechargeable energy storage cooling systems in battery electric vehicle

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair heating, ventilation and air conditioning (HVAC) system and rechargeable energy storage system (RESS) cooling system components on two different battery electric vehicles (BEVs), in which the work must involve:
  - repairing or replacing one HVAC system component to correct performance deficiencies
  - repairing or replacing one RESS cooling system component to correct performance deficiencies.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair HVAC and rechargeable energy storage cooling systems in battery electric vehicles, including:
  - information provided by customers and supervisors
  - Australian Standards (AS) 5732 Electric vehicle operations - Maintenance and repair
  - manufacturer specifications and procedures
- workplace procedures required to diagnose and repair HVAC and rechargeable energy storage cooling systems in battery electric vehicles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing HVAC and rechargeable energy storage cooling systems in battery electric vehicles, including procedures for:
    - identifying hazards and controlling risks associated with:
        - working with high voltages in BEV electrical systems
        - wearing jewellery while working around high electrical currents
    - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
        - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
        - identifying and using firefighting equipment
        - using the one hand rule
        - following live system warning tags and signs
        - depowering vehicle
        - isolating HV RESS electrical supply
        - stabilising vehicle electrical system
- environmental requirements relating to diagnosing and repairing HVAC and rechargeable energy storage cooling systems in battery electric vehicles, including:
    - trapping, storing and disposing of waste released from HVAC and RESS cooling systems
    - preventing the escape of refrigerant to the atmosphere
- safe operating procedures for tools and equipment, including:
    - those specified in the specific vehicle service maintenance procedures, including:
        - digital multimeter with Cat III 1000 volt rating
        - insulation tester
        - residual voltage tester
        - scan tool
        - oscilloscope
    - temperature and pressure measuring equipment, including:
        - manifold and gauge set
        - contact thermometer
        - infrared thermometer (pyrometer)
        - electronic temperature probe
        - psychrometer (humidity detector)
        - digital vacuum gauge (vacrometer)
        - refrigerant leak detecting equipment, including electronic leak detector
    - refrigerant recovery equipment, including:
        - recovery unit
        - vacuum pump

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    - electronic scales
    - miscellaneous equipment, including:
    - valve core removing or replacement tool
    - oil injector
- operating principles of HVAC and rechargeable energy storage cooling systems in battery electric vehicles, including:
    - types of HVAC systems, including engine operated and electric motor operated systems
    - types of RESS and RESS charging
    - reasons for cooling the RESS
- purpose and operation of HVAC systems and RESS cooling systems and components, including:
    - alternating current (AC) electric motor compressors
    - HVAC control units
    - HVAC control unit inputs and outputs
    - HVAC ejector cycle systems
    - RESS cooling systems, including air cooling, liquid cooling and HVAC cooled systems
- diagnostic testing procedures for HVAC and rechargeable energy storage cooling systems in battery electric vehicles, including procedures for:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
    - using diagnostic flow charts
    - electrical system testing, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - determining damage to compressor motor windings
        - checking insulation resistance of compressor motor windings
        - checking routing and damage to HV cabling
        - HVAC dynamic and static testing
        - analysing abnormal noise
        - analysing component failure
- repair procedures for HVAC and rechargeable energy storage cooling systems in battery electric vehicles, including procedures for:
    - tightening connections
    - replacing faulty or damaged cable connections
    - removing and replacing faulty or damaged components
- post-repair testing procedures for HVAC and rechargeable energy storage cooling systems in battery electric vehicles, including procedures for:
    - DTC clearing procedures

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  - checking for electrical connector mating
  - static and dynamic performance tests of HVAC systems and RESS cooling systems
- procedures for completing ARCtick service decal sticker, including:
  - name of service organisation
  - ARCtick business authority number
  - quantity of refrigerant added
  - refrigerant and oil type
  - service date
  - technician name and licence number.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEV HVAC and RESS cooling systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- ARC accredited service decal sticker (ARCtick)
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating
- manufacturer specifications for BEV HVAC and RESS cooling systems
- AS 5732 Electric vehicle operations: Maintenance and repair
- two different BEVs with HVAC and RESS cooling system components accessible for diagnosis and repair or replacement activities
- electrical diagnostic equipment appropriate to the BEV HVAC and RESS cooling being diagnosed and repaired as specified under tools and equipment in the range of conditions
- tools, equipment and materials appropriate for repairing HVAC and RESS cooling systems in BEVs.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards; and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH109 Diagnose and repair DC to DC converters in battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the high voltage (HV) direct current (DC) to low voltage (LV) DC of battery electric vehicles (BEVs). The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) rechargeable energy storage systems (RESS).

The unit applies to those who work in the automotive service and repair industry. HV DC to LV DC converters include circuits in BEVs.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

AURETH101 Depower and reinitialise battery electric vehicles

AURETR125 Test, charge and replace batteries and jump-start vehicles

Unit Sector

Electrical Technical – Hybrid Vehicle and Battery Vehicle

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and	1.1 Identify job requirements from workplace instructions

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ELEMENT	PERFORMANCE CRITERIA
repair DC to DC converters in battery electric vehicle	1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose DC to DC converters in battery electric vehicle	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair DC to DC converters in battery electric vehicle	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Isolate RESS service plug or manual service disconnect and depower vehicle HV RESS according to manufacturer specifications 3.4 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.5 Reconnect RESS service plug or manual service disconnect and repower vehicle HV RESS 3.6 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets symbols and wiring diagrams.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements • Measures voltage, current and resistance • Uses mathematical operations • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised tools.

Unit Mapping Information

Supersedes and is equivalent to AURETH009 Diagnose and repair DC to DC converters in battery electric vehicles.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH109 Diagnose and repair DC to DC converters in battery electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair the DC to DC converter and its system components on at least two different battery electric vehicles (BEVs) to correct performance deficiencies.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair DC to DC converters in battery electric vehicles, including:
  - information provided by customers and supervisors
  - Australian Standards (AS) 5732 Electric vehicle operations - Maintenance and repair
  - manufacturer specifications and procedures
- workplace procedures required to diagnose and repair DC to DC converters in battery electric vehicles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing DC to DC converters in battery electric vehicles, including procedures for:
  - identifying hazards and controlling risks associated with:

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    - working with high voltages in BEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
    - identifying and using firefighting equipment
    - using the one hand rule
    - following live system warning tags and signs
    - depowering vehicle
    - isolating HV RESS electrical supply
    - stabilising vehicle electrical system
- environmental requirements relating to diagnosing and repairing DC to DC converters in battery electric vehicles, including procedures for trapping, storing and disposing of waste produced during repair.
- safe operating procedures for tools and equipment, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - residual voltage tester
  - scan tool
  - oscilloscope
- operating principles of DC to DC converters in battery electric vehicles, including:
  - step-down converters
  - step-up converters
  - continuous current mode
  - discontinuous current mode
  - signal noise, including radio frequency (RF) noise, input noise and output noise
- purpose and operation of DC to DC converters in battery electric vehicles, including:
  - linear converters
  - switched mode conversion
  - magnetic converters
  - capacitive converters
- diagnostic testing procedures for DC to DC converters in battery electric vehicles, including procedures for:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
  - using diagnostic flow charts
  - electrical system testing, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring

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    - checking voltage input and output of DC to DC converters
    - checking routing and damage to cabling
- repair procedures for DC to DC converters in battery electric vehicles, including procedures for:
    - tightening connections
    - replacing faulty or damaged cable connections
    - removing and replacing faulty or damaged components
- post-repair testing procedures for DC to DC converters in battery electric vehicles, including procedures for:
    - DTC clearing procedures
    - checking for electrical connector mating.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEV DC to DC converters that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating
- manufacturer specifications for BEV DC to DC converters
- AS 5732 Electric vehicle operations: Maintenance and repair
- two different BEVs with DC to DC converters accessible for diagnostic and repair or replacement activities
- electrical diagnostic equipment appropriate to the BEV being diagnosed and repaired, including:
    - digital multimeter with Cat III 1000 volt rating
    - insulation tester
    - scan tool
    - oscilloscope
    - residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
- tools, equipment and materials appropriate for repairing DC to DC converters in BEVs.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETH110 Diagnose and repair high voltage rechargeable energy storage systems in hybrid electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the high voltage rechargeable energy storage systems of hybrid electric vehicles (HEVs) and plug-in hybrid electric vehicles (PHEVs). The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) rechargeable energy storage systems (RESS).

The unit applies to those who work in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

AURETR125 Test, charge and replace batteries and jump-start vehicles

Unit Sector

Electrical Technical – Hybrid Vehicle and Hybrid Vehicle

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair high voltage rechargeable energy	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify

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ELEMENT	PERFORMANCE CRITERIA
storage systems in hybrid electric vehicle	cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose high voltage rechargeable energy storage systems in hybrid electric vehicle	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair high voltage rechargeable energy storage systems in hybrid electric vehicle	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Isolate RESS service plug or manual service disconnect and depower vehicle HV RESS according to manufacturer specifications 3.4 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.5 Reconnect RESS service plug or manual service disconnect and repower vehicle HV RESS 3.6 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets symbols and wiring diagrams.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings on digital and analogue gauges • Measures voltage, current and resistance • Uses mathematical operations • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised tools.

Unit Mapping Information

Supersedes and is equivalent to AURETH010 Diagnose and repair high voltage rechargeable energy storage systems in hybrid electric vehicles.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH110 Diagnose and repair high voltage rechargeable energy storage systems in hybrid electric vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair high voltage (HV) rechargeable energy storage systems (RESS) in two different hybrid electric vehicles (HEVs) or plug-in hybrid electric vehicles (PHEVs) to correct performance deficiencies.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair high voltage rechargeable energy storage systems in hybrid electric vehicles, including:
  - information provided by customers and supervisors
  - Australian Standards (AS) 5732 Electric vehicle operations - Maintenance and repair
  - manufacturer specifications and procedures
- workplace procedures required to diagnose and repair high voltage rechargeable energy storage systems in hybrid electric vehicles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing high voltage rechargeable energy storage systems in hybrid electric vehicles, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages in HEV and PHEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
    - identifying and using firefighting equipment
    - using the one hand rule
    - following live system warning tags and signs
    - depowering vehicle
    - isolating HV RESS electrical supply
    - stabilising vehicle electrical system
- environmental requirements relating to diagnosing and repairing high voltage rechargeable energy storage systems in hybrid electric vehicles, including procedures for trapping, storing and disposing of waste produced during repair
- safe operating procedures for tools and equipment, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - residual voltage tester
  - scan tool
  - oscilloscope
- operating principles of high voltage rechargeable energy storage systems in HEVs and PHEVs, including:
  - battery pack construction, including:
    - battery types
    - battery internal resistance
  - battery pack system, including:
    - charging characteristics
    - open circuit cells
    - reverse polarisation
    - series cell configuration
    - strapping and layout
- purpose and operation of RESS, including:
  - HV battery charger and direct current (DC) to DC converter
  - battery management system (BMS)
  - power distribution unit (PDU)

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- diagnostic testing procedures for high voltage rechargeable energy storage systems in hybrid electric vehicles, including procedures for:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
  - using diagnostic flow charts
  - electrical system testing, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - testing controller input and output signals and waveforms
    - vehicle dynamic and static testing procedures
    - analysing abnormal noise
    - analysing component failure
  - RESS cooling system testing
  - repair procedures for high voltage rechargeable energy storage systems in hybrid electric vehicles, including procedures for:
    - tightening connections
    - replacing faulty or damaged cable connections
    - removing and replacing faulty or damaged components
    - removing and replacing motor controller
- post-repair testing procedures for high voltage rechargeable energy storage systems in hybrid electric vehicles, including procedures for:
  - DTC clearing procedures
  - checking for electrical connector mating
  - performance testing RESS.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the RESS in HEVs and PHEVs that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE, including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
- manufacturer specifications for HEV or PHEV RESS

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- AS 5732 Electric vehicle operations - Maintenance and repair
- two different HEVs or PHEVs RESS and associated components accessible for diagnosis and repair or replacement activities
- electrical diagnostic equipment appropriate to the HEVs or PHEVs being diagnosed and repaired, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - residual voltage tester, if specified in original equipment manufacturer (OEM) specifications
  - scan tool
  - oscilloscope
- tools, equipment and materials appropriate for repairing HEV or PHEV RESS and their components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH114 Diagnose complex faults in hybrid and battery electric vehicle network management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in hybrid, plug-in hybrid and battery electric vehicle (HEV, PHEV and BEV) network management systems and determine the repair action necessary to restore system performance. The systems used vary based on the work context. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) rechargeable energy storage systems (RESS). Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those who work in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Hybrid Vehicle and Battery Vehicle

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions. 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement

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ELEMENT	PERFORMANCE CRITERIA
	control measures in line with workplace policies and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery.
Reading	• Researches, organises and interprets technical information from manufacturer and workshop literature when seeking network management system specifications and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures network management system components and uses mathematical operations to calculate tolerances and deviations

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SKILL	DESCRIPTION
	from manufacturer specifications.
Planning and organising	• Plans own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETH014 Diagnose complex faults in hybrid and battery electric vehicle network management systems.

Links

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Assessment Requirements for AURETH114 Diagnose complex faults in hybrid and battery electric vehicle network management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose complex faults in the embedded network management systems of:
  - at least one battery electric vehicle (BEV)
  - at least one hybrid electric vehicle (HEV) or one plug-in hybrid electric vehicle (PHEV)
- develop a testing strategy to diagnose the cause of at least two of the following complex faults, each present in one of the above vehicles:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair complex faults in hybrid and battery electric vehicle network management systems, including:
  - hybrid and battery electric vehicle network management systems system manufacturer specifications
- workplace procedures required to diagnose and repair complex faults in hybrid and battery electric vehicle network management systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:

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    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in hybrid and battery electric vehicle network management systems, including procedures for:
    - identifying hazards and controlling risks associated with:
        - working with high voltages on vehicle electrical systems
        - working with hazardous materials and toxic substances
        - wearing jewellery while working around high electrical currents
    - minimising risk, including:
        - analysing task to define risk
        - applying electrical safety precautions, including one hand rule, live system warning tags and signs, depowering the vehicle, isolating the high voltage (HV) rechargeable energy storage system (RESS) electrical supply, and stabilising the vehicle electrical system
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
    - identifying and using fire safety equipment
    - lifting and moving the RESS using safe manual handling techniques
    - using workplace first aid equipment
- environmental requirements relating to hybrid and battery electric vehicle network management systems
- types of complex faults relating to hybrid and battery electric vehicle network management systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- operating principles of network management systems and data multiplexing in HEVs, PHEVs and BEVs
- key features of hybrid and battery electric vehicle network management systems, including:
    - direct current (DC) electric motor types, including:
        - separately excited motors
        - permanent magnet motors
    - alternating current (AC) electric motor types, including:
        - induction motors
        - brushless motors
    - motor controllers, including:

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    - variable pulse width DC types
    - variable frequency, variable amplitude AC types
  - inverters and converters, including:
    - AC to DC
    - DC to AC
  - batteries, including:
    - lead acid batteries
    - nickel metal hydride batteries
    - lithium ion batteries
    - ultra capacitors and super capacitors
  - parallel hybrid electric vehicles
  - series hybrid electric vehicles
  - power split hybrid electric vehicles
- testing procedures for hybrid and battery electric vehicle network management systems, including:
  - vehicle dynamic and static testing
  - abnormal noise analysis
  - component failure analysis
  - vehicle continuous and non-continuous monitored systems
- key features and limitations of diagnostic testing equipment required to diagnose complex faults relating to hybrid and battery electric vehicle network management systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the HEV, PHEV and BEV network management systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- AS 5732 Electric vehicle operations: Maintenance and repair
- manufacturer HEV, PHEV and BEV network management system specifications
- one BEV and one HEV or PHEV with complex network management system faults
- BEV, HEV and PHEV network management system diagnostic equipment, including:
  - digital multimeter
  - scan tool
  - oscilloscope
  - specialist BEV, PHEV and HEV tools and equipment as specified in original equipment manufacturer requirements
- tools, equipment and materials appropriate for diagnosing complex faults in HEV, PHEV and BEV network management systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETR103 Identify automotive electrical systems and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to identify the function and basic operation of a range of vehicle electrical systems and components. It involves preparing for the task, locating information on the systems and components, and demonstrating knowledge of electrical systems.

The unit applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Locate and identify electrical system and its components	1.1 Identify task requirements from task instructions including vehicle or machinery to be worked 1.2 Obtain technical information regarding electrical system to be identified 1.3 Identify electrical system major components according to workplace health and safety requirements and task instructions

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ELEMENT	PERFORMANCE CRITERIA
2. Demonstrate knowledge of electrical system	2.1 Confirm system function from technical information and demonstrate during workplace activities 2.2 Confirm system major component function and basic operation from technical information and demonstrate during workplace activities 2.3 Confirm system relationship to vehicle or machinery operation is from technical information

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Oral communication	• Participates effectively in verbal exchanges using questioning and active listening to request, clarifies and clearly conveys information
Numeracy	• Uses and communicates basic numerical information relating to automotive electrical systems and components.

Unit Mapping Information

Supersedes and is equivalent to AURETR003 Identify automotive electrical systems and components.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR103 Identify automotive electrical systems and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, locate and check the operation of the following basic electrical systems while carrying out required workplace activities:
  - vehicle electrical power supplies
  - ignition system
  - fuel delivery system
  - charging system
  - starting system
  - lighting system
  - fuses and circuit breakers
  - wiring looms and harnesses.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- workplace health and safety (WHS) requirements relating to the identification of automotive electrical systems, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and equipment
  - following workplace safety procedures
- basic theory and principles of automotive electrical systems, including:
  - alternating current (AC)
  - direct current (DC)
  - Ohm’s law

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- identification, function and basic operation of vehicle electrical systems and components, including**:**
  - vehicle electrical power supplies
  - ignition system
  - fuel delivery system
  - charging system
  - starting system
  - lighting system
  - body electrical systems
  - fuses and circuit breakers
  - wiring looms and harnesses
- basic automotive terminology relating to electrical systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the automotive electrical system information that they have applied, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workshop or task instructions
- information regarding basic electrical principles and fundamentals
- information regarding vehicle electrical systems and components
- workplace safety equipment, including PPE
- a vehicle with the automotive electrical systems specified in the performance evidence
- automotive tools and equipment relating to workplace activities being carried out.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETR104 Diagnose complex faults in convenience and entertainment systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in vehicle embedded network convenience and entertainment systems and determine the repair action necessary to restore system performance. The systems used vary based on the work context. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those who work in the automotive service and repair industry. The convenience and entertainment systems include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENT	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures.

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates and evaluates required sources of information efficiently • Develops own approach to a task, including steps to confirm

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SKILL	DESCRIPTION
	findings • Applies diagnostic skills to different vehicles or machinery
Reading	• Organises and interprets technical information from manufacturer and workshop literature when seeking convenience and entertainment system specifications and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures system components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interpret units, such as amperes, ohms, and volts
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETR004 Diagnose complex faults in convenience and entertainment systems.

Links

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Assessment Requirements for AURETR104 Diagnose complex faults in convenience and entertainment systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in the convenience and entertainment systems of two different vehicles, vessels or machinery in which the work for each must involve a different complex fault selected from the following:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems
- develop a testing strategy to diagnose the cause of the complex faults in the above two vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair complex faults in convenience and entertainment systems, including:
  - convenience and entertainment system manufacturer specifications
  - workplace procedures
- workplace procedures required to diagnose and repair complex faults in convenience and entertainment systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in vehicle convenience and entertainment systems, including procedures for identifying hazards and controlling risks associated with:
    - working around vehicle supplementary restraint systems (SRS), including airbags
    - wearing jewellery while working around high electrical currents
- environmental requirements relating to convenience and entertainment systems
- types of complex faults relating to vehicle convenience and entertainment systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- key features of convenience and entertainment systems in vehicles, vessels or machinery, including:
    - infotainment systems
    - telematics systems
    - intelligent transport systems
    - safety restraint systems
    - passenger comfort systems
- testing procedures for vehicle convenience and entertainment systems, including:
    - using digital multimeter, scan tool and oscilloscope
    - component wear analysis
    - system operation analysis
    - vehicle continuous and non-continuous monitored systems
- key features and limitations of diagnostic testing equipment required to diagnose complex faults in vehicle convenience and entertainment systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the convenience and entertainment systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer convenience and entertainment system specifications
- two different vehicles, vessels or machinery with complex faults in their convenience and entertainment systems
- convenience and entertainment system electrical and electronic system diagnostic equipment, including:
  - digital multimeter
  - scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in convenience and entertainment systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR112 Test and repair basic electrical circuits

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect, test and repair basic electrical circuits in vehicle and machinery electrical systems. It involves preparing for the task, inspecting and testing the circuit, repairing the circuit, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The basic electrical circuits include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, motorcycles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to test basic electrical circuit	1.1 Determine job requirements from workplace instructions 1.2 Identify required information for testing activity and select fault finding options according to workplace procedures 1.3 Identify hazards and environmental issues associated with test and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for testing activity and establish serviceability according to workplace procedures

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ELEMENT	PERFORMANCE CRITERIA
2. Test circuit	2.1 Inspect extent of failure or damage to basic electrical circuit according to workplace procedures 2.2 Test circuit according to workplace procedures and workplace health and safety requirements 2.3 Identify cause of fault through analysis of test results. 2.4 Confirm and report cause of fault according to workplace procedures
3. Repair circuit	3.1 Identify required information for repair activity 3.2 Analyse repair options and select procedure according to workplace procedures. 3.3 Identify tools and equipment required for repair activity and establish serviceability according to workplace procedures 3.4 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.5 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets text, symbols and wiring diagrams in information relating to basic electrical system testing and repair equipment from manufacturer specifications, and workplace instructions and procedures
Oral communication	• Clarifies instructions
Numeracy	• Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance

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SKILL	DESCRIPTION
	• Uses basic mathematical operations, including addition, subtraction, multiplication and division, to calculate deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised tools and equipment

Unit Mapping Information

Supersedes and is equivalent AURETR012 Test and repair basic electrical circuits.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR112 Test and repair basic electrical circuits

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- test the following basic electrical circuits:
  - one short circuit across an electrical resistive load
  - one open circuit before or after an electrical resistive load
  - one high resistance circuit before or after an electrical resistive load
  - current flow across an electrical resistive load
  - voltage drop across an electrical resistive load
- test for continuity in a basic wiring harness and visually check terminals in the wiring harness for moisture ingress and corrosion
- carry out four different circuit repairs in which the work must involve:
  - crimping various terminal sizes
  - soldering wire gauges to terminals
  - applying heat shrink insulation to crimped or soldered joints
  - replacing male and female terminals in a connector housing
  - performing terminal retention checks to replaced terminals.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to test and repair basic electrical circuits, including:
  - technical information, including:
    - circuit types
    - circuit diagrams
    - circuit symbols

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    - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to test and repair basic electrical circuits, including:
    - establishing serviceability of tools and equipment
    - documentation procedures
    - housekeeping procedures, including:
        - examination of tools and equipment
        - storage of equipment
        - identification, tagging and isolation of faulty equipment
        - disposal of excess materials
        - recycling procedures
- workplace health and safety (WHS) requirements relating to testing and repairing basic electrical circuits, including procedures for:
    - using specialised tools and equipment
    - selecting and using personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with wearing jewellery while working around electrical systems
- environmental procedures relating to testing and repairing basic electrical circuits
- basic theory and principles of automotive electrical systems, including:
    - current
        - alternating current (AC)
        - direct current (DC)
    - voltage
    - resistance
    - power
    - Ohm’s law
- identification and operation of the following electrical circuits:
    - series circuits
    - parallel circuits
    - series parallel circuits
- key features of basic electrical circuit components, including:
    - cable types, including:
        - cable sizes
        - current carrying capacity
    - circuit protection devices
    - switches
    - relays
    - automotive globes
- procedures for using and operating electrical test equipment, including:
    - digital multimeters

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    - test lights suitable for circuit testing, including resistive and light emitting diode (LED)
    - test probes suitable for testing circuit continuity
    - fused test lead
- common types of faults, including:
    - open circuits
    - high resistance circuits
    - short circuits
    - damaged insulation
    - frayed wires
    - burnt wiring
    - water and moisture ingress
    - connector damage
    - terminal damage
- testing procedures for electrical systems, including:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - electrical measuring and testing procedures, including:
        - electrical resistance checks
        - open and short circuit tests
        - voltage drop tests
        - current flow tests
    - visual testing procedures, including:
        - component moisture ingress
        - connector damage
- repair procedures for electrical circuits, including:
    - wire soldering procedures
    - terminal crimping procedures
    - replacing male and female terminals in a connector housing
    - connector removal and replacement procedures
    - basic electrical components removal and replacement procedures
- post-repair testing procedures, including:
    - confirming that electrical system is operating to manufacturer specifications
    - confirming that no other problems are present as a result of the repair.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the basic electrical circuits they have tested and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer electrical system specifications
- vehicle or machinery with faults in the basic electrical circuits specified in the performance evidence
- electrical test equipment to test basic electrical circuits and components
- consumable materials relevant to repairing basic electrical circuits and components, including connectors, terminals, wire, electrical tape and heat shrink sleeving
- electrical repair tools, equipment and materials relating to basic electrical circuits and components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETR115 Inspect, test and service batteries

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service vehicle, vessel and machinery batteries. It involves preparing for the task, inspecting battery systems, servicing the systems, and completing workplace processes and documentation, including any associated recommendations for further action.

The unit applies to those who work in the automotive service and repair industry. The battery systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, motorcycles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect, test and service battery	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret servicing information 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for inspect and servicing activity and establish serviceability according to workplace procedures
2. Inspect and test battery	2.1 Carry out inspection and testing of battery systems according

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ELEMENT	PERFORMANCE CRITERIA
	to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 2.2 Carry out inspection and testing of battery circuits according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 2.3 Compare inspection results against manufacturer specifications 2.4 Report inspection findings and make recommendations for necessary repairs according to workplace procedures
3. Service and maintain battery	3.1 Service and maintain battery according to manufacturer and battery specifications, workplace procedures and workplace health and safety and environmental requirements 3.2 Carry out post-service testing according to manufacturer specifications workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets information from manufacturer and workshop literature when seeking battery service procedures and specifications
Oral communication	• Clarifies instructions and reports inspection findings to required personnel
Numeracy	• Matches battery types and identification numbers to workplace instructions and manufacturer specifications • Interprets and compares battery specifications and procedures
Technology	• Uses specialised tools and equipment when inspecting, testing and servicing batteries

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Unit Mapping Information

Supersedes and is equivalent to AURETR015 Inspect, test and service batteries.

Links

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Assessment Requirements for AURETR115 Inspect, test and service batteries

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect, test and service the batteries of three different vehicles, vessels or machinery, in which the work must involve one maintenance-free battery.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect, test and service batteries, including:
  - vehicle manufacturer specifications and procedures or equivalent documentation
  - battery manufacturer specifications
- workplace procedures required to inspect, test and service batteries, including:
  - inspecting, testing, servicing and post-service testing batteries
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to inspecting, testing and servicing batteries, including procedures for:
  - selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection

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    - identifying a hybrid vehicle
    - identifying a battery electric vehicle
    - working with high current electrical systems
    - manually handling batteries and toxic and corrosive substances
    - conducting risk assessments of battery, vehicle and equipment movement before carrying out work
    - working safely when using battery testing equipment
- environmental requirements, including procedures:
    - found in safety data sheets (SDS) relating to toxic and corrosive substances
    - for recycling and disposing of replaced batteries
- tools, equipment and materials relating to inspecting, testing and servicing batteries, including:
    - battery load testing device
    - multimeter
    - battery cleaning materials
- basic operating principles of batteries, including:
    - using chemical energy to produce electrical energy
    - the difference between voltage and current
- types of automotive batteries, including:
    - lead acid batteries
    - deep cycle batteries
    - maintenance-free batteries
    - gel batteries
    - absorbed glass mat batteries
    - calcium batteries
    - lithium ion and lithium ion phosphate batteries
- battery classifications, including:
    - reserve capacity
    - amp hour rating
    - cold cranking amps
- battery specifications and measurements, including:
    - battery-specific gravity measurements
    - cold cranking amp (CCA) measurements
- battery connection methods for 6 volt, 12 volt, 24 volt and 48 volt, including:
    - series
    - parallel
    - series parallel
- inspection and testing procedures for batteries, including:
    - terminals and leads
    - battery securing system

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  - testing battery with load testing devices
  - testing battery with a hydrometer
  - battery memory retention
- servicing procedures for batteries, including:
  - cleaning battery and battery compartments
  - topping up battery fluid
- post-service testing procedures, including confirming that battery is serviceable and operating to manufacturer specifications.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the batteries that they have inspected, tested and serviced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer battery specifications
- PPE, including clothing, and eye and hand protection
- three different vehicles, vessels or machinery with batteries as specified in the performance evidence requiring servicing
- tools, equipment and materials appropriate for inspecting, testing and servicing batteries, including battery load testing devices, multimeters and cleaning materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETR116 Read and apply vehicle wiring schematics and drawings

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to read and apply technical information in the wiring schematics and drawings of vehicles, vessels and machinery when testing and fault-finding electrical wiring systems. It involves preparing for the task, reading and interpreting the schematics and drawings, and completing work processes.

The unit applies to those who work in the automotive service and repair industry. The wiring schematics and diagrams include those in electrical systems in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to read and apply vehicle wiring schematics and drawings	1.1 Identify job requirements from workplace instructions 1.2 Identify wiring schematics and drawings for vehicle, vessel or machinery electrical system being tested 1.3 Check schematics and drawings for currency and inclusion of latest amendments
2. Apply information	2.1 Identify and interpret electrical circuit information in schematics and drawings

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Use information to assist when carrying out testing and repair procedures on electrical wiring systems
3. Complete work processes	3.1 Store schematics and drawings according to workplace procedures 3.2 Report damage to schematics and drawings according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Oral communication	• Clarifies information
Numeracy	• Interprets numbers and units relating to electrical circuits and wiring systems in automotive workshop hard copy and online documentation • Determines correct measurement relationships for voltage, current and resistance in electrical circuits from wiring schematics and drawings • Interprets correct wiring gauge and dimensions from wiring schematics and drawings

Unit Mapping Information

Supersedes and is equivalent to AURETR016 Read and apply vehicle wiring schematics and drawings.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR116 Read and apply vehicle wiring schematics and drawings

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- read, interpret and apply information from three different vehicle, vessel or machinery wiring schematics and diagrams when testing and fault finding their electrical wiring systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret vehicle wiring schematics and drawings, including:
  - procedures for identifying currency and version control of wiring schematics and drawings
- workplace procedures required to apply vehicle wiring schematics and drawings, including:
  - storage and maintenance of vehicle wiring schematics and drawings
  - reporting damage to vehicle wiring schematics and drawings
- types of information in wiring schematics and drawings, including:
  - circuit symbols
  - wiring codes
  - vehicle zone tables
  - legends
  - diagrammatic representations
- key components of wiring schematics and drawings, including:
  - vehicle wiring schematics
  - electrical component symbols
  - electrical operational block schematics

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- controller area network databus (CAN-bus) circuit diagrams
- vehicle zoning information tables
- electrical component drawings
- connector drawings that include connector end view drawings.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle or machinery wiring schematics and drawings they have interpreted, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- wiring schematics and drawings relating to three different vehicles, vessels or machinery.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR120 Diagnose and repair network electronic control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair network electronic control systems. These systems include two-wire high and low speed (CAN-bus) and single wire low speed (LIN-bus) networked circuits essential to control engine powertrain, vehicle dynamic control functions and body control functions. They include vehicle infotainment and climate control systems. The systems used vary based on the work context. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. Embedded networked systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair network electronic control system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer

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ELEMENT	PERFORMANCE CRITERIA
	procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose network electronic control system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair network electronic control system	3.1 Identify required information for repair activity 3.2 Identify required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Reads and interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETR020 Diagnose and repair network electronic control systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR120 Diagnose and repair network electronic control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least three different network electronic control circuits that set network communication diagnostic trouble codes (DTCs), including one single wire circuit (LIN-bus) and one two-wire circuit (CAN-bus).
- carry out a diagnostic test in the course of the above work for at least one of the following faults:
  - high resistance in an input system
  - worn or damaged wiring or connectors
  - shorted system components.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair network electronic control systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair network electronic control systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing network electronic control systems, including procedures for identifying hazards and controlling risks associated with:
    - working on vehicle high voltage ignition systems
    - wearing jewellery while working around high current wiring systems
- environmental procedures relating to diagnosing and repairing network electronic control systems.
- diagnostic testing procedures for network electronic control systems, including:
    - using diagnostic flow charts
    - accessing and interpreting scan tool system data, including:
        - DTCs, including 'U' type communication codes
        - live data
        - freeze frame data
        - waveforms
    - testing electrical systems, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - determining damage to system wiring and connectors
- repair procedures for network electronic control systems, including:
    - connector removal and replacement procedures
    - removal and replacement procedures for vehicle network electronic control system components
- post-repair testing procedures for network electronic control systems, including:
    - confirming fault rectification
    - DTC clearing procedures
    - checking for electrical connector mating
- operating principles of network electronic control systems and associated components, including:
    - assurance of message delivery, non-conflicting messages, minimum time of delivery, and electromagnetic field (EMF) noise resilience
    - network topographies
    - network protocols, including characteristics and data speeds
- purpose and operation of network electronic control systems and components, including:
    - controlled area network (CAN), including:
        - nodes: host processor, CAN controller, and transceiver
        - gateway modules
        - terminating resistors
        - data transmission
        - vehicle data logic connector (DLC)
    - local interconnect network (LIN), including:

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- master and slaves
- data transmission.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the network electronic control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for network electronic control systems
- two different network electronic control circuits
- diagnostic equipment for network electronic control circuits, including:
  - multimeter
  - scan tool
  - oscilloscope
- tools, equipment and materials appropriate for repairing network electronic control circuits.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR122 Diagnose and repair vehicle dynamic control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair vehicle dynamic control systems. These systems include the functions of a vehicle electronic braking control module (EBCM), such as anti-lock braking, brake assist, descent control, electronic brake force distribution, electronic park brake, hill start assist, stability control, traction control and active roll-over protection. The systems used vary based on the work context. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. Embedded networked systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair vehicle dynamic control system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer

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ELEMENT	PERFORMANCE CRITERIA
	procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose vehicle dynamic control system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair vehicle dynamic control system	3.1 Identify required information for repair activity 3.2 Identify required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURETR022 Diagnose and repair vehicle dynamic control systems.

Links

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Assessment Requirements for AURETR122 Diagnose and repair vehicle dynamic control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in each of two of the following dynamic control systems of:
  - one vehicle or machinery with an anti-lock braking system (ABS)
  - one vehicle or machinery with a traction control system (TCS)
  - one vehicle or machinery with an active safety system.
- carry out diagnostic tests in the course of the above for at least one of the following faults:
  - high resistance in an input system
  - worn or damaged wiring or connectors
  - shorted system components.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair vehicle dynamic control systems, including:
  - information provided by customers and supervisors
  - vehicle dynamic control systems manufacturer specifications
- workplace procedures required to diagnose and repair vehicle dynamic control systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing vehicle dynamic control systems, including procedures for:
    - using specialised tools and equipment
    - using appropriate personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with:
        - working on vehicle high and low voltage ignition systems
        - wearing jewellery while working around high current wiring systems
- operating principles of vehicle dynamic control systems and associated components, including:
    - active roll-over protection
    - anti-lock braking
    - brake assist
    - descent control
    - electronic brake force distribution
    - electronic park brake
    - hill start assist
    - stability control
    - traction control
    - active and passive collision avoidance
    - lane keeping assist
    - occupant detection systems
    - adaptive cruise control
    - roll-over protection
- purpose and operation of vehicle dynamic control systems and components, including:
    - ABS, including system inputs, electronic control unit (ECU), ABS modulator, and system outputs
    - TCS, including system inputs, ECU, and system outputs, including associated throttle and braking system controls
    - electronic stability control (ESC), including system inputs, including yaw and steering angle sensors, and ECU and system outputs, including associated throttle and braking system controls
- diagnostic testing procedures for vehicle dynamic control systems, including:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - waveforms
    - using diagnostic flow charts
    - testing electrical systems, including procedures for:

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    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - determining damage to system wiring and connectors
- repair procedures for vehicle dynamic control systems, including:
    - connector removal and replacement procedures
    - removal and replacement procedures for vehicle dynamic control system components
    - calibration and re-setting procedures
- post-repair testing procedures for vehicle dynamic control systems, including:
    - DTC clearing procedures
    - checking for electrical connector mating.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle dynamic control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer vehicle dynamic control system specifications
- two different vehicles or machinery with dynamic control system faults
- diagnostic equipment for vehicle dynamic control systems, including:
    - multimeter
    - scan tool
- tools, equipment and materials appropriate for repairing vehicle dynamic control systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR123 Diagnose and repair spark ignition engine management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the spark ignition engine management systems of vehicles, vessels or machinery. The unit involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in an automotive service and repair industry. The spark ignition engine management systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair spark ignition engine management system	1.1 Access workplace instructions to identify job requirements and confirm existence of fault according to workplace procedures 1.2 Source and interpret required information for diagnosis activity, including customer complaint, workplace and manufacturer procedures 1.3 Source testing strategy to efficiently identify cause of fault

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ELEMENT	PERFORMANCE CRITERIA
	using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies 1.5 Identify diagnostic tools and equipment required for the job and examine them for serviceability
2. Diagnose engine management system	2.1 Carry out diagnostic tests according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Analyse diagnostic test results to identify cause of fault, conducting further tests if required 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs or adjustments according to workplace procedures
3. Repair engine management system	3.1 Source and interpret required information for repair activity, including manufacturer specifications, workplace and manufacturer procedures 3.2 Identify repair tools, equipment and materials required for the job and examine for serviceability 3.3 Carry out repairs or component replacements and adjustments according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements to confirm fault rectification and repair any issues identified
4. Complete work processes	4.1 Carry out final inspection to ensure work meets workplace expectations and vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETR023 Diagnose and repair spark ignition engine management systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR123 Diagnose and repair spark ignition engine management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the spark ignition engine management systems of three different vehicles or machinery, including:
  - faults in two system input sensors
  - faults in one system output actuator
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - low or high pressure in the fuel system
  - damaged sensors, connectors or wiring
  - leaking or restricted injectors.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair spark ignition engine management systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair spark ignition engine management systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) relating to diagnosing and repairing spark ignition engine management systems, including procedures for:
    - using specialised tools and equipment, including multimeters, scan tools and oscilloscope
    - using appropriate personal protective equipment (PPE)
- identifying hazards and controlling risks associated with:
    - working on vehicle high voltage ignition systems
    - wearing jewellery while working around high current wiring systems
    - working with high pressure petrol fuel systems
- environmental requirements relating to diagnosing and repairing spark ignition engine management systems
- diagnostic testing procedures for spark ignition engine management systems, including:
    - diagnostic flow charts
    - fuel system testing, including:
        - low pressure fuel system testing
        - high pressure fuel system testing
    - testing electrical systems, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - injector testing
        - sensor testing
        - actuator testing
    - accessing and interpreting industry-relevant test equipment data, including:
        - fault codes
        - live data
        - freeze frame data
        - waveforms
- repair procedures for spark ignition engine management systems, including procedures for:
    - removing and replacing the following electrical or electronic components:
        - sensors
        - actuators, including fuel injectors and fuel pumps
    - adjusting and recalibrating components and associated systems
- post-repair testing procedures, including procedures for:
    - clearing fault codes
    - assessing engine performance
    - checking for electrical connector mating

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- operating principles of spark ignition engine management systems and associated components, including:
  - combustion, including:
    - air-fuel ratios and chemistry of combustion
    - composition of petrol fuel, including octane rating
    - indirect and direct fuel injection
- purpose and operation of spark ignition engine management systems and components, including:
  - fuel system, including:
    - fuel filters
    - fuel pumps
    - fuel pressure regulators
    - fuel injectors
  - electronic control system, including the following system inputs:
    - throttle position sensors
    - coolant temperature sensors
    - oxygen sensors
    - load sensors and air flow meters
    - intake air temperature sensors
    - crankshaft position sensors
    - camshaft position sensors
    - battery voltage
    - accessory load sensors
    - knock sensors
  - key features of electronic control units (ECUs), including:
    - read-only memory (ROM)
    - programmable read-only memory (PROM)
    - electronically erasable programmable read-only memory (EEPROM)
    - random access memory (RAM)
    - multiplexing
    - adaptive learning
    - short-term fuel trim (STFT)
    - long-term fuel trim (LTFT)
    - sensor reference voltages and sensor grounds
  - system outputs, including:
    - injectors
    - idle speed control devices
    - fuel pump relays
    - engine cooling fans
    - air conditioning compressor controls

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    - broadband intake manifolds
    - exhaust gas recirculation solenoid controls
    - carbon canister purge controls
    - throttle motor (drive by wire) controls
    - variable valve timing controls
    - assembly line diagnostic link (ALDL)
- ignition systems and components, including:
    - spark plugs
    - ignition leads
    - ignition coils, including electromagnetic induction
    - ignition timing, including varying ignition timing according to engine load, speed and knock sensor input
    - dwell period
- ECU control of ignition coil switching and methods of generating timing signals, including:
    - crankshaft position sensor signals, including inductive pick-up, Hall effect and light emitting diode (LED)
    - waste spark ignition systems
    - coil-on-plug ignition systems
    - integrated ignition systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the spark ignition engine management systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for spark ignition engine management systems
- three different vehicles or machinery with spark ignition engine management system faults
- diagnostic equipment for spark ignition engine management systems, including:
    - multimeter
    - scan tool

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- tools, equipment and materials appropriate for repairing spark ignition engine management systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR124 Diagnose and repair compression ignition engine management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the compression ignition engine management systems of vehicles, vessels or machinery. The unit involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in an automotive service and repair industry. The compression ignition engine management systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair compression ignition engine management system	1.1 Access workplace instructions to identify job requirements and confirm existence of fault according to workplace procedures 1.2 Source and interpret required information for diagnosis activity, including customer complaint, workplace and manufacturer procedures 1.3 Source testing strategy to efficiently identify cause of fault

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ELEMENT	PERFORMANCE CRITERIA
	using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies 1.5 Identify diagnostic tools and equipment required for the job and examine them for serviceability
2. Diagnose engine management system	2.1 Carry out diagnostic tests according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Analyse diagnostic test results to identify cause of fault, conducting further tests if required 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs or adjustments according to workplace procedures
3. Repair engine management system	3.1 Source and interpret required information for repair activity, including manufacturer specifications, workplace and manufacturer procedures 3.2 Identify repair tools, equipment and materials required for the job and examine for serviceability 3.3 Carry out repairs or component replacements and adjustments according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements to confirm fault rectification and repair any issues identified
4. Complete work processes	4.1 Carry out final inspection to ensure work meets workplace expectations and vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETR024 Diagnose and repair compression ignition engine management systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR124 Diagnose and repair compression ignition engine management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the compression ignition engine management systems of three different vehicles or machinery, including:
  - faults in two of the following:
    - engine position sensor
    - throttle position sensor
    - engine coolant temperature sensor
    - engine mass airflow (MAF) sensor
    - inlet air temperature (IAT) sensor
  - faults in one of the following:
    - fuel injector
    - engine fuel pressure sensor
    - boost pressure sensor
    - low pressure fuel delivery pump
    - high pressure fuel rail pump
    - electronic control unit (ECU)
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - low or high pressure in the fuel system
  - damaged sensors, connectors or wiring
  - leaking or restricted injectors.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

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- methods to locate and interpret information required to diagnose and repair compression ignition engine management systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair compression ignition engine management systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - use of specialised tools and equipment, including multimeters, scan tools and oscilloscope
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing compression ignition engine management systems, including procedures for identifying hazards and controlling risks associated with:
  - working with high pressure diesel fuel systems
  - wearing jewellery while working around high current wiring systems
- environmental requirements relating to diagnosing and repairing compression ignition engine management systems
- key features of compression ignition engine management systems and components, including common rail fuel systems and unit injection systems:
  - low pressure stage
  - high pressure stage, including:
    - high pressure injection pump
    - injectors
    - high pressure fuel line
  - compression ignition engine management systems, including:
    - sensors
    - actuators
    - wiring harness
    - electronic control module (ECM)
    - associated vehicle systems
- diagnostic testing procedures for compression ignition engine management systems, including:
  - diagnostic flow charts
  - fuel system testing, including:
    - low pressure fuel system testing

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    - high pressure fuel system testing
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors or wiring
    - injector testing
    - sensor testing
    - actuator testing
  - accessing and interpreting industry-relevant test equipment data, including:
    - fault codes
    - live data
    - freeze frame data
    - waveforms
- repair for compression ignition engine management systems, including procedures for:
  - removing and replacing sensors
  - removing and replacing actuators, including fuel injectors and fuel pumps
  - adjusting and recalibrating components and their associated systems
- post-repair testing procedures, including procedures for:
  - checking fault codes
  - assessing engine performance
  - checking for electrical connector mating
- operating principles of diesel fuel injection systems and associated components, including:
  - phases of combustion
  - composition of diesel fuel, including cetane and sulphur content.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the compression ignition engine management systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for compression ignition engine management systems
- three different vehicles or machinery with compression ignition engine management system faults

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- diagnostic equipment for compression ignition engine management systems, including:
  - multimeter
  - scan tool
- tools, equipment and materials appropriate for repairing compression ignition engine management systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR125 Test, charge and replace batteries and jump-start vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to test, charge, replace, retest and secure a range of automotive batteries, including vehicle or machinery jump-starting procedures. It involves preparing for the task, inspecting and testing the battery to determine serviceability, charging, jump-starting, removing and replacing, and undertaking the final retesting of batteries, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The batteries include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, motorcycles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to test, charge and replace batteries and jump-start vehicle	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret technical information and safe operating procedures for testing batteries and equipment 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for the work and

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ELEMENT	PERFORMANCE CRITERIA
	establish serviceability according to workplace procedures
2. Test battery	2.1 Inspect and test battery according to manufacturer or other required specifications, workplace procedures, and workplace health and safety and environmental requirements 2.2 Identify faults and damage on battery cables, terminals and case through visual inspection 2.3 Check and top-up electrolyte levels when required according to manufacturer or other required specifications, workplace procedures, and workplace health and safety and environmental requirements 2.4 Clean battery and terminals according to manufacturer or other required specifications, workplace procedures, and workplace health and safety and environmental requirements 2.5 Check battery voltage and load and confirm if battery requires charging, jump-starting or replacement according to workplace procedures
3. Charge battery	3.1 Obtain and interpret battery charging information 3.2 Prepare tools and equipment for charging battery according to manufacturer specifications and workplace procedures, and workplace health and safety and environmental requirements 3.3 Check and top-up electrolyte levels when required according to manufacturer specifications, workplace procedures, and workplace health and safety and environmental requirements 3.4 Identify battery charge rate and connect battery charger to battery according to manufacturer or other required specifications, workplace procedures and workplace health and safety and environmental requirements 3.5 Charge battery according to manufacturer or other required specifications, workplace procedures and workplace health and safety and environmental requirements 3.6 Turn off and disconnect battery charger according to manufacturer or other required specifications, workplace procedures and workplace health and safety and environmental requirements and confirm electrolyte levels are in line with manufacturer or other required specifications
4. Carry out jump-start procedures	4.1 Identify and confirm battery voltage is in line with manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements to begin jump-start procedures 4.2 Connect jumper leads in sequence and polarity according to manufacturer specifications, workplace procedures and

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ELEMENT	PERFORMANCE CRITERIA
	workplace health and safety and environmental requirement 4.3 Jump-start vehicle according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 4.4 Disconnect leads in sequence and polarity according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirement
5. Remove and replace battery	5.1 Connect power source memory back-up device according to workplace procedures 5.2 Disconnect battery terminals according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 5.3 Remove battery from vehicle according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 5.4 Choose replacement battery according to electrical and physical specifications and measurements of vehicle or machinery 5.5 Replace and secure battery according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 5.6 Re-connect and tighten battery terminals according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 5.7 Carry out post-replacement testing of battery charging system according to manufacturer specifications, workplace procedures and workplace health and safety and environmental
6. Complete work processes	6.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 6.2 Clear work area and dispose of or recycle materials according to workplace procedures 6.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets safety data sheets (SDS), and safe operating procedures in manufacturer specifications and workplace procedures • Interprets text, symbols and wiring diagrams in manufacturer specifications, and workplace instructions and procedures
Oral communication	• Clarifies instructions • Reports inspection findings and makes recommendations

Numeracy	• Identifies, interprets and matches components and requirements to manufacturer specifications, including:
	  • battery types
	  • battery identification numbers and specifications
	• Calculates charge rate from cold cranking amp (CCA) and reserve capacity (RC) battery rating requirements

Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised tools and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETR025 Test, charge and replace batteries and jump-start vehicles.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR125 Test, charge and replace batteries and jump-start vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- test two different types of automotive batteries
- charge two batteries, in which the work must involve:
  - slow or trickle charging one battery
  - rapid charging the second battery
- remove and replace batteries from two different vehicles or machinery
- jump-start two different vehicles or machinery.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to test, charge and replace batteries and jump-start vehicles, including:
  - battery and vehicle manufacturer specifications
  - safety data sheets (SDS)
- workplace procedures required to test, charge and replace batteries and jump-start vehicles, including:
  - testing batteries
  - charging batteries
  - replacing batteries
  - jump-starting vehicles
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) policies and procedures relating to testing, charging and replacing batteries and jump-start vehicles, including procedures for:
  - safely operating:
    - battery testing equipment
    - battery charging equipment
  - selecting and using personal protective equipment (PPE), including safety glasses
  - identifying hazards and controlling risks associated with:
    - battery, vehicle and machinery movement before carrying out work
    - wearing jewellery while working around high current wiring systems
  - identifying hybrid vehicles
  - identifying battery electric vehicles
- environmental requirements relating to testing, charging and replacing batteries and jump-starting vehicles, including procedures for:
  - following safety data sheets (SDS) to trap, store and dispose of toxic and corrosive substances
  - disposing of or recycling batteries
- tools and equipment required for testing, charging and replacing batteries and jump-starting vehicles, including:
  - load testing devices
  - hydrometers
  - multimeters
  - jumper leads
  - battery chargers
  - battery cleaning materials
- difference between voltage and current
- key features and uses of batteries, including:
  - lead acid batteries, including deep cycle batteries
  - gel batteries
  - absorbed glass mat batteries
  - calcium batteries
  - lithium ion and lithium ion phosphate batteries
- battery connection methods for 6 volt, 12 volt, 24 volt and 48 volt, including:
  - series
  - parallel
  - series parallel
- battery classification methods, including:

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    - cold cranking amps (CCA)
    - reserve capacity (RC)
    - amp hour rating
- battery testing procedures, including:
    - testing safety requirements
    - visual inspection procedures
    - voltage drop testing
    - hydrometer testing
    - high rate discharge testing
- battery charging procedures, including:
    - charging safety requirements
    - slow, fast and trickle charging
    - battery memory retention
- battery replacement procedures, including:
    - determining battery specifications to suit vehicle or machinery manufacturer specifications, including correct:
        - voltage
        - CCA and RC ratings
    - replacement safety requirements
    - terminal disconnection
    - battery selection
    - battery installation and terminal connection
    - securing battery in vehicle
    - system recalibration procedures
- battery jump-start procedures, including:
    - vehicle and personnel safety requirements
    - battery terminal disconnection
    - jumper lead connection and disconnection.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the batteries that they have tested, charged, replaced and jump-started, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer battery specifications
- PPE for testing, charging, removing and replacing batteries and jump-starting vehicles and machinery, including safety glasses
- two different types of serviceable batteries
- two different vehicles or machinery requiring jump-starting
- tools, equipment and materials appropriate for battery testing, charging and replacement, including:
  - load testing device
  - hydrometer
  - multimeter
  - jumper leads
  - battery charger
  - battery cleaning materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR128 Diagnose and repair instruments and warning systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair instruments and warning systems. The systems used vary based on the work context. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The instruments and warning systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, motorcycles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair instruments and warning system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with

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ELEMENT	PERFORMANCE CRITERIA
	diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose instruments and warning system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair instruments and warning system	3.1 Identify required information for repair activity 3.2 Identify required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task

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SKILL	DESCRIPTION
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to instruments and warning system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches instruments and warning system components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle instruments and warning measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETR028 Diagnose and repair instruments and warning systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR128 Diagnose and repair instruments and warning systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two of the following instruments and warning system components, each in a different vehicle, vessel or piece of machinery:
  - driver instrument warning gauge assembly
  - engine monitoring warning assembly
  - vehicle warning visual alert assembly
  - vehicle warning audible alert assembly
- remove, refit or replace an instrument panel in at least one vehicle, vessel or machinery
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - high resistance in an input system
  - loose connections
  - shorted system components.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair instruments and warning systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair instruments and warning systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures

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  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing instruments and warning systems, including procedures for working with high current wiring systems
- environmental requirements relating to diagnosing and repairing instruments and warning systems
- purpose and operation of instruments and warning systems and components, including:
  - instrument panel construction
  - panel illumination
  - magnetic and thermal gauges
  - voltage regulators
  - mechanical gauges
  - digital electronic gauges and systems
  - warning lights and indicators
- diagnostic testing procedures for instruments and warning systems, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - waveforms
  - using diagnostic flow charts
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - checking resistance, current flow and voltage instruments and warning systems
- repair procedures for instruments and warning systems, including:
  - tightening connections
  - replacing faulty or damaged cable connections
  - removing and replacing faulty or damaged components
- post-repair testing procedures for instruments and warning systems, including:
  - DTC clearing procedures
  - checking for electrical connector mating
  - static and dynamic performance tests of instruments and warning systems, including test-driving procedures.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the instruments and warning systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer instrument and warning system specifications
- two different vehicles, vessels or machinery with instrument and warning system faults
- diagnostic equipment for instruments and warning systems, including multimeter
- tools, equipment and materials appropriate for repairing vehicle, vessel or machinery instruments and warning systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETR129 Diagnose and repair charging systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair charging systems. The systems used vary based on the work context. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The charging systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair charging system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose charging system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair charging system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer or other required specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches alternator types and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETR029 Diagnose and repair charging systems.

Links

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Assessment Requirements for AURETR129 Diagnose and repair charging systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two of the following charging system components, each in a different vehicle, vessel or piece of machinery:
  - alternator stator or rotor circuit
  - alternator internal regulator control circuit
  - external regulator battery management system circuit
  - battery to alternator wiring and earthing system circuit
  - DC – DC charging system circuit
  - machinery charging system circuit
  - solar charging system circuit
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - high resistance in an input system
  - loose or damaged connectors or wiring
  - shorted system components.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair charging systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair charging systems, including:
  - establishing serviceability of tools and equipment

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    - documentation procedures
    - housekeeping procedures, including:
        - examination of tools and equipment
        - storage of equipment
        - identification, tagging and isolation of faulty equipment
        - disposal of excess materials
        - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing charging systems, including procedures for:
    - using specialised tools and equipment
    - using appropriate personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with:
        - working on high voltage ignition systems
        - wearing jewellery while working around high current wiring systems
- operating principles of charging systems and associated components, including:
    - charging batteries with direct current
    - vehicle system power and electrical current requirements
    - generating principles, including Faraday's law and inducing an electromotive force (EMF)
    - producing direct current (DC) EMF
    - producing alternating current (AC) EMF
    - changing AC to DC, including half-wave and full-wave rectification
- purpose and operation of charging systems and components, including:
    - alternators, including:
        - internal component function and operation
        - external components and drive function and operation
        - star-connected and delta-connected stator windings
        - regulation of output voltage, including zener diodes and exciter diodes
    - battery management systems
    - solar
- diagnostic testing procedures for charging systems, including:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - waveforms
    - using diagnostic flow charts
    - testing electrical systems, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - load testing charging systems

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    - resistance, current flow and voltage drop checks of charging system circuits
- repair procedures for charging systems, including:
    - tightening connections
    - replacing faulty or damaged cable connections
    - removing and replacing faulty or damaged components
- post-repair testing procedures for charging systems, including:
    - DTC checking procedures
    - checking for electrical connector mating
    - static and dynamic performance tests of charging systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the charging systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for vehicle, vessel or machinery charging systems
- two different vehicles, vessels or machinery with charging system faults
- diagnostic equipment for vehicle, vessel or machinery charging systems, including:
    - multimeter
    - scan tool
- tools, equipment and materials appropriate for repairing vehicle, vessel or machinery charging systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETR130 Diagnose and repair starting systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair starting systems. The systems used vary based on the work context. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The starting systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair starting system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose starting system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair starting system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches alternator types and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURETR030 Diagnose and repair starting systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR130 Diagnose and repair starting systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the starting system of two different vehicles, vessels or machinery in which the fault in each system is within one of the following:
  - vehicle starter motor and solenoid circuit
  - vehicle ignition switch to solenoid control circuit
  - vehicle battery to starter motor circuit
  - machinery starting system circuit
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - high resistance in an input system
  - loose or damaged connectors or wiring
  - broken or worn solenoids.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair starting systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair starting systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing starting systems, including procedures for:
    - using specialised tools and equipment
    - using appropriate personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with:
        - working on high voltage ignition systems
        - wearing jewellery while working around high current wiring systems
- operating principles of starting systems and associated components, including:
    - producing movement due to the force between magnetic fields
    - producing magnetic fields due to current flow through conductors
    - basic direct current motor operation, including simple armature, magnetic field and commutator
- purpose and operation of starting systems and components, including:
    - high current systems, including:
    - armature, commutator, field windings
    - starter motor windings, including series wound, shunt wound, and compound wound
    - permanent magnet starter motors
    - direct drive and reduction-type starter motors
- starting electrical systems, including:
    - solenoids
    - shift levers
    - overrunning clutch flywheel ring gears
    - control circuits systems including:
        - ignition switching, including key start, push-button start, remote start and start-stop systems
        - safety switches, including inhibitor switches and clutch neutral switches
- diagnostic testing procedures for starting systems, including:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - freeze frame data
        - waveforms
    - using diagnostic flow charts
    - testing electrical systems, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring

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    - load testing starting systems
    - resistance, current flow and voltage drop checks of starting system circuits
  - solenoid test
  - field winding tests
  - armature tests, including using a growler
  - commutator tests
  - brushes and holder tests
  - overrunning clutch and pinion tests
  - flywheel ring gear tests
  - starter motor bench tester operation
- repair procedures for starting systems, including:
  - tightening connections
  - replacing faulty or damaged cable connections
  - removing and replacing faulty or damaged components
- post-repair testing procedures for starting systems, including:
  - DTC checking procedures
  - checking for electrical connector mating
  - static and dynamic performance tests of starting systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the starting systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for vehicle, vessel or machinery starting systems
- two different vehicles, vessels or machinery with starting system faults
- diagnostic equipment for vehicle, vessel or machinery starting systems, including multimeter
- tools, equipment and materials appropriate for repairing vehicle, vessel or machinery starting systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURETR131 Diagnose and repair ignition systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the ignition systems of vehicles, vessels or machinery. The unit involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in an automotive service and repair industry. The ignition systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair ignition system	1.1 Access workplace instructions to identify job requirements and confirm existence of fault according to workplace procedures 1.2 Source and interpret required information for diagnosis activity, including customer complaint, workplace and manufacturer procedures 1.3 Source testing strategy to efficiently identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace

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ELEMENT	PERFORMANCE CRITERIA
	policies 1.5 Identify diagnostic tools and equipment required for the job and examine them for serviceability
2. Diagnose ignition system	2.1 Carry out diagnostic tests according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Analyse diagnostic test results to identify cause of fault, conducting further tests if required 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs or adjustments according to workplace procedures
3. Repair ignition system	3.1 Source and interpret required information for repair activity, including manufacturer specifications, workplace and manufacturer procedures 3.2 Identify repair tools, equipment and materials required for the job and examine for serviceability 3.3 Carry out repairs or component replacements and adjustments according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements to confirm fault rectification and repair any issues identified
4. Compete work processes	4.1 Carry out final inspection to ensure work meets workplace expectations and vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task

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SKILL	DESCRIPTION
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETR031 Diagnose and repair ignition systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR131 Diagnose and repair ignition systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the ignition systems of two different vehicles, vessels or machinery, including faults in two of the following:
  - magneto with contact points
  - magneto with solid state trigger
  - capacitive discharge ignition
  - distributor with contact points
  - distributor with hall effect sensor
  - distributor with induction magnetic trigger
  - distributor with optical sensor
  - waste spark
  - coil on plug
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - high resistance in an ignition system
  - loose or damaged connectors or wiring
  - malfunctioning ignition coils.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair ignition systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation

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- workplace information required to diagnose and repair ignition systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing ignition systems, including procedures for:
  - using specialised tools and equipment, including multimeters, scan tools and oscilloscope
  - using appropriate personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with:
    - working on high voltage ignition systems
    - wearing jewellery while working around high current wiring systems
- environmental requirements relating to diagnosing and repairing ignition systems
- diagnostic testing procedures for ignition systems, including:
  - using diagnostic flow charts
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - checking resistance, current flow and voltage drop of ignition system circuits
    - testing ignition coils
  - using oscilloscopes, including interpreting ignition system primary and secondary waveforms
- repair procedures for ignition systems, including:
  - removing and replacing faulty or damaged components
- post-repair testing procedures for ignition systems, including static and dynamic performance tests of ignition systems
- operating principles of ignition systems and associated components, including:
  - generating principles, including Faraday’s law and inducing an electromotive force (EMF)
- key features of ignition systems and components, including:
  - ignition coils, including:
    - internal component function and operation: primary windings, iron core and secondary windings
    - electromagnetic induction in the coil
    - spark plugs: identification, thread size, reach, heat range, resistance-type plugs, and type and number of earth electrodes

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    - ignition leads
    - firing order
- electronic ignition systems, including:
    - pulse generator systems: stator and rotor units, ignition control units, current limiting and dwell control
    - Hall effect systems: Hall effect device, and permanent magnet and signal waveform
    - optical ignition systems: light emitting diodes (LEDs), rotating disc and optical electronic semiconductors
    - coil on plug ignition systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the ignition systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer ignition system specifications
- two different vehicles, vessels or machinery with ignition system faults
- diagnostic equipment for ignition systems, including:
    - multimeter
    - scan tool
    - oscilloscope
- tools, equipment and materials appropriate for repairing vehicle, vessel or machinery ignition systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETR132 Diagnose and repair automotive electrical systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair automotive electrical systems. The systems used vary based on the work context. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The automotive electrical systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, motorcycles, mobile plant machinery, or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair automotive electrical system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose automotive electrical system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair automotive electrical system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches alternator types and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURETR032 Diagnose and repair automotive electrical systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR132 Diagnose and repair automotive electrical systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least three of the following electrical system single wire (non CAN-bus) circuits:
  - entry-exit locking systems with electric motor control circuit
  - power windows circuit
  - interior or exterior lighting circuit
  - turning indicator circuit
  - brake light circuit
  - hazard warning light circuit
  - electrical drive motor circuit
- carry out at least four of the following electrical connector repairs to a vehicle or machinery wiring harness:
  - crimp two different terminal types and sizes
  - remove two faulty connectors from the back of different terminals
  - solder two different wire gauges to electrical terminals
  - apply heat shrink insulation to two different crimped or soldered joints
  - check terminal retention on two different female terminals and connectors
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - high resistance in an input system
  - damaged connectors or wiring
  - shorted or worn system components.

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Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair automotive electrical systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair automotive electrical systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing automotive electrical systems, including procedures for:
  - using specialised tools and equipment
  - using appropriate personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with:
    - working on high voltage ignition systems
    - wearing jewellery while working around high current wiring systems
- operating principles of automotive electrical systems and associated components, including:
  - current, voltage, resistance and power
  - series circuits
  - parallel circuits
  - series and parallel circuits
  - Ohm’s law
  - Faraday’s law
  - Kirchhoff's law
  - magnetism and direct current (DC) motor operation
  - electromagnetic interference and radiation
  - cable types and sizes and current carrying capacity
  - circuit protection devices
- purpose and operation of automotive electrical systems and components, including:
  - wiper motors
  - electric windows

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    - electric door locks
    - fan motors
    - horns
    - lighting
    - radio aerials
- diagnostic testing procedures for automotive electrical systems, including:
    - visual, aural and functional assessments of electrical system components, including:
        - component damage and wear
        - component or connector corrosion
        - component water or moisture ingress
    - common faults in electrical circuits, including:
        - open circuits
        - high resistance circuits
        - short circuits
        - damaged insulation
        - frayed wires
        - burnt wiring
        - water and moisture ingress
        - connector damage
        - terminal damage
    - using diagnostic flow charts
    - testing electrical systems, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - checking resistance, current flow and voltage drop of system circuits
    - procedures for using:
        - digital multimeters
        - test lights and probes
        - oscilloscopes
- repair procedures for automotive electrical systems, including:
    - selecting and soldering wires
    - selecting and crimping terminals
    - removing and replacing connectors
    - removing and replacing electrical systems and their components
- post-repair testing procedures for automotive electrical systems, including:
    - checking for electrical connector mating
    - checking circuit current flow
    - static and dynamic performance tests of automotive electrical systems.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electrical systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer automotive electrical system specifications
- three different vehicles or machinery with electrical system faults
- diagnostic equipment for electrical systems, including multimeter
- tools, equipment and materials appropriate for repairing automotive electrical systems, including:
  - automotive wiring
  - heat shrink
  - soldering iron.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETR135 Apply knowledge of petrol and diesel engine operation

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to apply knowledge of petrol and diesel engine components and systems, as well as of the principles of engine operation, during the testing and repair of basic electrical circuits in vehicles, vessels and machinery.

The unit applies to those who work in the automotive service and repair industry. The engines include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify relevant information relating to petrol and diesel engine operation in work activities	1.1 Identify functions of engine components during testing and repair activities 1.2 Identify functions of ignition, charging, starting and engine management systems during testing and repair activities
2. Apply knowledge of petrol and diesel engine operation in work activities	2.1 Identify effect of electrical system on engine performance during testing and repair activities 2.2 Apply knowledge of the relationship that a four-stroke cycle petrol engine has with vehicle ignition, starting, air and fuel

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ELEMENT	PERFORMANCE CRITERIA
	delivery and cooling systems 2.3 Apply knowledge of the relationship that a diesel engine has with vehicle ignition, starting, air and fuel delivery and cooling systems
3. Evaluate knowledge of petrol and diesel engine operation	3.1 Regularly check knowledge with colleagues and supervisor 3.2 Update knowledge as required according to role requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets a range of technical information relating to petrol and diesel engines and their operation
Numeracy	• Interprets numbers and units relating to petrol and diesel engines in automotive technical information • Uses basic mathematical operations to calculate engine dimensions, such as bore, stroke power, and torque • Interprets numbers and units used with measuring equipment, such as compression gauges and cylinder leakage testers.

Unit Mapping Information

Supersedes and is equivalent to AURETR035 Apply knowledge of petrol and diesel engine operation.

Links

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Assessment Requirements for AURETR135 Apply knowledge of petrol and diesel engine operation

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- apply knowledge of petrol and diesel engine operation during the testing and repair of three different vehicle, vessel or machinery electrical systems
- evaluate and expand knowledge of petrol and diesel engine operation, including demonstrating knowledge of one of the following:
  - a new automotive petrol and diesel engine testing procedure
  - a new automotive petrol and diesel engine repair procedure
  - a new automotive petrol and diesel engine technology.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret sources of technical information relevant to automotive electrical systems, including:
  - workplace service information
  - automotive engine mechanical texts
  - vehicle workshop manuals
  - service bulletins
  - technical articles
  - automotive textbooks
- classifications of engines, including:
  - internal combustion
  - reciprocating and rotary engines
  - spark ignition engines
  - compression ignition engines

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    - engine cylinder arrangements
- engine configurations, including:
    - inline engines, V type engines and slant cylinder engines
    - opposed cylinder engines
- camshaft and valve locations, including:
    - overhead cam (OHC)
    - overhead valve (OHV)
- engine operating principles, including:
    - two-stroke cycles
    - four-stroke cycles
- engine measurement and performance ratings
- operating performance of engines, including:
    - petrol engines
    - diesel engines
- petrol and diesel engine operation, including:
    - engine construction
    - engine types and configuration
    - two-stroke and four-stroke
    - cycles of engine operation, including:
        - intake stroke
        - compression stroke
        - power stroke
        - exhaust stroke
    - firing orders
    - ignition types, including:
        - spark
        - compression
    - engine mounting location, including:
        - front longitudinal
        - front transverse
        - mid transverse
    - measurement and performance, including:
        - bore and stroke
        - displacement
        - compression ratio
        - engine efficiency
    - torque versus horsepower
- engine components, including:
    - top of engine, including:
        - timing belt or chain

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    - camshaft timing pulley
    - camshaft single and dual
    - rocker arms and shafts
    - intake valves and springs
    - exhaust valves and springs
    - cylinder head
  - front of engine, including:
    - crankshaft
    - crankshaft timing pulley
    - crankshaft pulley and balancer
  - rear of engine, including:
    - flywheel
    - starter ring gear
  - bottom of engine, including:
    - engine block
    - crankshaft
    - crankshaft balance weights
    - crankshaft main bearing journals
    - pistons
    - connecting rods
- relationships between electrical systems and engine performance, including:
  - ignition system and engine power and torque, including:
    - ignition timing
    - combustion stroke pressure
  - diesel injection system and engine power and torque, including:
    - injection timing
    - combustion stroke pressure
  - starter motor system, including:
    - current draw of starting system of high compression engines
    - types of batteries and starter motors for petrol and diesel engines
    - wiring requirements of starter motor systems for petrol and diesel engines
  - charging system, including system requirements for low and high-speed engines.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having applied knowledge of petrol and diesel engine systems and components to the vehicles and machinery that they have worked on, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- technical information relating to petrol and diesel engines
- automotive tools and electrical test equipment relating to the system being tested or repaired
- three different vehicles, vessels or machinery with functional electrical systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETR137 Diagnose complex faults in light vehicle safety systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in light vehicle or light commercial vehicle embedded network safety systems and determine the repair action necessary to restore system performance. The systems used vary based on the work context. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings.
Reading	• Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking safety system specifications and procedures.

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures safety system components and uses mathematical operations to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interpret units, such as amperes, ohms, and volts.
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETR037 Diagnose complex faults in light vehicle safety systems.

Links

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Assessment Requirements for AURETR137 Diagnose complex faults in light vehicle safety systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose complex faults in the light vehicle safety systems of two different light vehicles, in which the work for each vehicle must involve a different fault chosen from the following:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems
- develop a testing strategy to diagnose the cause of the two complex faults in the vehicles above.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in light vehicle safety systems, including:
  - light vehicle safety systems system manufacturer specifications
- workplace procedures required to diagnose complex faults in light vehicle safety systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in light vehicle safety systems, including procedures for:
    - identifying hazards and controlling risks associated with:
        - working with high voltages on vehicle electrical systems
        - working around the vehicle's supplementary restraint systems (SRS), including airbags
        - wearing jewellery while working around high electrical currents
    - disarming vehicle airbag and safety restraint systems
- types of complex faults relating to light vehicle safety systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types, function and operation of light vehicle safety systems, including:
    - active and passive collision avoidance
    - adaptive front lighting systems
    - airbag systems
    - lane keeping assist
    - occupant detection systems
    - radar cruise control
    - roll-over protection
    - seatbelt pre-tensioners
- testing procedures for light vehicle safety systems, including:
    - using digital multimeter, scan tool and oscilloscope
    - vehicle dynamic and static testing
    - component failure analysis
    - vehicle continuous and non-continuous monitored systems
- types and key features of diagnostic testing equipment required to diagnose complex faults in light vehicle safety systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
        - live data
        - waveforms.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle safety systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle safety system specifications
- two different light vehicles or light commercial vehicles with complex faults in their safety systems
- light vehicle safety system diagnostic equipment, including:
  - digital multimeter
  - scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in light vehicle safety systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETR138 Diagnose complex faults in motorcycle electrical and electronic systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in motorcycle electrical and electronic systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The electrical and electronic systems include those in motorcycles or all-terrain vehicles (ATVs).

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery.

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SKILL	DESCRIPTION
Reading	• Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking electronic and electrical system specifications and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures electronic and electrical system components and uses basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interpret units, such as amperes, ohms, and volts.
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETR038 Diagnose complex faults in motorcycle electrical and electronic systems.

Links

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Assessment Requirements for AURETR138 Diagnose complex faults in motorcycle electrical and electronic systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in the electrical or electronic systems of at least two different motorcycles or all-terrain vehicles (ATVs) in which the work for each must involve a different type of complex fault from among the following:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems
- develop a testing strategy to diagnose the cause of the two complex faults above.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in motorcycle or ATV electrical and electronic system, including:
  - motorcycle or ATV electrical and electronic system manufacturer specifications
- workplace procedures required to diagnose complex faults in motorcycle or ATV electrical and electronic systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in motorcycle electrical and electronic systems, including procedures for identifying hazards and controlling risks associated with:
    - high voltage vehicle ignition systems
    - high current vehicle electrical systems
    - wearing jewellery while working around high electrical currents
- environmental requirements relating to motorcycle electrical and electronic systems.
- types of complex faults relating to motorcycle electrical and electronic systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types, function and operation of motorcycle and ATV electrical and electronic systems, including:
    - lighting system
    - ignition system
    - charging system
    - starting system
    - engine management system
    - anti-lock braking system (ABS)
    - immobiliser system
- testing procedures for motorcycle electrical and electronic systems, including:
    - using digital multimeter, scan tool and oscilloscope
    - vehicle dynamic and static testing
    - component failure analysis
    - vehicle continuous and non-continuous monitored systems
- types, functions, operation and limitations of diagnostic testing equipment required to diagnose complex faults in motorcycle electrical and electronic systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - freeze frame data
    - waveforms.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electrical and electronic systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle or ATV electrical and electronic system specifications
- two different types of motorcycles or ATVs with complex faults in their electrical or electronic systems
- motorcycle or ATV electrical and electronic system diagnostic equipment, including:
  - digital multimeter
  - scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in motorcycle or ATV electrical and electronic systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR139 Diagnose complex faults in light vehicle theft-deterrent systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in light vehicle or light commercial vehicle embedded network theft-deterrent systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

This unit applies to those working in the automotive service and repair industry. The light vehicle theft-deterrent systems include those of light vehicles and light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement

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ELEMENTS	PERFORMANCE CRITERIA
	control measures in line with workplace policies and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings.
Reading	• Interprets workplace instructions such as job cards • Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking light vehicle theft-deterrent system specifications and

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SKILL	DESCRIPTION
	procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures light vehicle theft-deterrent system components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interpret units, such as amperes, ohms, and volts.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETR039 Diagnose complex faults in light vehicle theft-deterrent systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR139 Diagnose complex faults in light vehicle theft-deterrent systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose complex faults in the theft-deterrent systems of two different light vehicles, in which the work for each must involve a different complex fault chosen from the following:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems
- develop a testing strategy to diagnose the cause of the complex faults in the two vehicles above.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in light vehicle theft-deterrent systems, including:
  - light vehicle theft-deterrent system manufacturer specifications
- workplace procedures required to diagnose complex faults in light vehicle theft-deterrent systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in light vehicle theft-deterrent systems, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high electrical currents
- types of complex faults relating to light vehicle theft-deterrent systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types, function and operation of light vehicle theft-deterrent systems, including:
    - vehicle locking and securing
    - passive entry
    - integrated alarm
    - engine immobiliser
    - remote access
- testing procedures for light vehicle theft-deterrent systems, including:
    - using digital multimeter, scan tool and oscilloscope
    - component wear analysis
    - system operation analysis
    - vehicle continuous and non-continuous monitored systems
- types, functions, operation and limitations of diagnostic testing equipment required to diagnose complex faults in light vehicle theft-deterrent systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - freeze frame data
    - waveforms.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle theft-deterrent systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle theft-deterrent system specifications
- two different light vehicles with complex faults in their theft-deterrent systems
- light vehicle theft-deterrent system diagnostic equipment, including:
  - digital multimeter
  - scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in light vehicle theft-deterrent systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETR140 Diagnose complex faults in vehicle monitoring and protection systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in vehicle embedded network vehicle monitoring and protection systems and determine the repair action necessary to restore system performance. The systems used vary based on the work context. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those who work in the automotive service and repair industry. The vehicle monitoring and protection systems include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement

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ELEMENT	PERFORMANCE CRITERIA
	control measures in line with workplace policies and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates and evaluates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from manufacturer and workshop literature when seeking

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SKILL	DESCRIPTION
	monitoring and protection system specifications and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures monitoring and protection system components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interpret units, such as amperes, ohms, and volts
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURETR040 Diagnose complex faults in vehicle monitoring and protection systems.

Links

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Assessment Requirements for AURETR140 Diagnose complex faults in vehicle monitoring and protection systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose complex faults in the monitoring and protection systems of two different vehicles, vessels or machinery in which the work for each must involve a different complex fault selected from the following:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems
- develop a testing strategy to diagnose the cause of the complex faults in the above vehicles, vessels or machinery.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair complex faults in vehicle monitoring and protection systems, including:
  - vehicle monitoring and protection systems system manufacturer specifications
- workplace procedures required to diagnose and repair complex faults in vehicle monitoring and protection systems including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in vehicle monitoring and protection systems, including procedures for:
    - identifying hazards and controlling risks associated with wearing jewellery while working around high electrical currents
- environmental requirements relating to vehicle monitoring and protection systems
- types of complex faults relating to vehicle monitoring and protection systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- key features of vehicle monitoring and protection systems, including:
    - display types, including:
        - liquid crystal display (LCD)
        - vacuum fluorescent display (VFD)
        - cathode ray tube (CRT)
        - heads-up display (HUD)
        - reconfigurable systems
        - electronic analogue display
        - on-board diagnostics
        - remote and wireless monitoring systems
- testing procedures for vehicle monitoring and protection systems, including:
    - using digital multimeter, scan tool and oscilloscope
    - component wear analysis
    - system operation analysis
    - vehicle continuous and non-continuous monitored systems
- key features and limitations of diagnostic testing equipment required to diagnose complex faults relating to vehicle monitoring and protection systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - freeze frame data
    - waveforms.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the monitoring and protection systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer vehicle, vessel or machinery monitoring and protection system specifications
- three different vehicles, vessels or machinery with complex faults in their monitoring and protection systems
- monitoring and protection system diagnostic equipment relating to vehicles, vessels or machinery, including:
  - digital multimeter
  - scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in monitoring and protection systems of vehicles, vessels or machinery.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR143 Diagnose and repair electronic body management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair electronic body management systems. These systems include two-wire high and low speed (CAN-bus) and single wire low speed (LIN-bus) networked circuits in the vehicle or machinery's embedded network electronic control system and are essential to controlling vehicle, vessel or machinery body control functions, including passenger convenience, comfort, navigation and infotainment systems. The systems used vary based on the work context. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The electronic body management systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair electronic body management system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer

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ELEMENT	PERFORMANCE CRITERIA
	procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose electronic body management system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair electronic body management system	3.1 Identify required information for repair activity 3.2 Identify required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches electronic body control components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURETR043 Diagnose and repair electronic body management systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR143 Diagnose and repair electronic body management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two of the following electronic body management systems of vehicles, vessels or machinery:
  - entry and exit systems, which must include:
    - power door lock circuit
    - key coding to vehicle
    - anti-theft immobilisation circuit
  - power window system
  - lighting system
  - navigation system
  - infotainment system
  - passenger comfort system
  - supplemental restraint system (SRS) air bag
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - high resistance in an input system
  - damaged connectors or wiring
  - shorted or worn system components.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair electronic body management systems, including:
  - information provided by customers and supervisors

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    - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair electronic body management systems, including:
    - establishing serviceability of tools and equipment
    - documentation procedures
    - housekeeping procedures, including:
        - examination of tools and equipment
        - storage of equipment
        - identification, tagging and isolation of faulty equipment
        - disposal of excess materials
        - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing electronic body management systems, including procedures for:
    - using specialised tools and equipment
    - using appropriate personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
    - disarming vehicle airbag and safety restraint systems, including:
        - airbag construction
        - safe testing
        - safe deployment
        - safe disposal
- operating principles of electronic body management systems and associated components, including types of electronic body management systems
- purpose and operation of electronic body management systems and components, including:
    - entry and exit systems, including:
        - power door lock circuits
        - key coding to vehicles
        - anti-theft immobilisation circuits
    - power window systems
    - lighting systems
    - navigation systems
    - infotainment systems
    - passenger comfort systems
- diagnostic testing procedures for electronic body management systems, including:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - waveforms
- using diagnostic flow charts

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- testing electrical systems, including procedures for:
  - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
  - resistance and voltage drop tests
  - open and short circuit tests
  - checking shorts to signal, power circuits and grounds
- repair procedures for electronic body management systems, including procedures for removing and replacing system components
- post-repair testing procedures for electronic body management systems, including:
  - DTC clearing procedures
  - static and dynamic performance tests of electronic body management systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electronic body management systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer body management system specifications
- vehicles, vessels or machinery with electronic body management system faults
- diagnostic equipment for body management systems, including:
  - multimeter
  - scan tool
- tools, equipment and materials appropriate for repairing vehicle, vessel or machinery electronic body management systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR144 Diagnose and repair integrated engine and transmission management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the engine and transmission management systems of vehicles or machinery. These systems communicate on the vehicle two-wire (CAN-bus) networked controlled circuit and are an integral part of an engine and transmission management system. The unit involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in an automotive service and repair industry. The engine and transmission management systems include those in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair engine and transmission management system	1.1 Access workplace instructions to identify job requirements and confirm existence of fault according to workplace procedures 1.2 Source and interpret required information for diagnosis activity, including customer complaint, workplace and manufacturer procedures

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Source testing strategy to efficiently identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies 1.5 Identify diagnostic tools and equipment required for the job and examine them for serviceability
2. Diagnose engine and transmission management system	2.1 Carry out diagnostic tests according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Analyse diagnostic test results to identify cause of fault, conducting further tests if required 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs or adjustments according to workplace procedures
3. Repair engine and transmission management system	3.1 Source and interpret required information for repair activity, including manufacturer specifications, workplace and manufacturer procedures 3.2 Identify repair tools, equipment and materials required for the job and examine for serviceability 3.3 Carry out repairs or component replacements and adjustments according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements to confirm fault rectification and repair any issues identified
4. Complete work processes	4.1 Carry out final inspection to ensure work meets workplace expectations and vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETR044 Diagnose and repair integrated engine and transmission management systems.

Links

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Assessment Requirements for AURETR144 Diagnose and repair integrated engine and transmission management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the integrated engine and transmission management systems of two different vehicles or machinery, in which the work must involve removing, refitting or replacing a system component that affects the operation of both the engine and the transmission management system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair integrated engine and transmission management systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair integrated engine and transmission management systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing integrated engine and transmission management systems, including procedures for:
  - using specialised tools and equipment

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  - using appropriate personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with:
    - working on vehicle high voltage ignition systems
    - wearing jewellery while working around high current wiring systems
- environmental requirements relating to diagnosing and repairing integrated engine and transmission management systems
- diagnostic testing procedures for integrated engine and transmission management systems, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - freeze frame data
    - waveforms
  - using diagnostic flow charts
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - resistance and voltage drop tests
    - open and short circuit tests
    - checking shorts to signal, power circuits and grounds
- repair procedures for integrated engine and transmission management systems, including procedures for removing and replacing system components
- post-repair testing procedures, including:
  - DTC clearing procedures
  - static and dynamic performance tests
- integrated engine and transmission management system principles, including:
  - engine and transmission management system topography, inputs and outputs
  - typical vehicle or machinery systems equipped with engine and transmission management systems
- key features of integrated engine and transmission management systems and components, including:
  - control modules
  - control sensors and actuators
  - communication systems, including controlled area network data bus (CAN-bus).

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the integrated engine and transmission management systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for engine and transmission management systems
- two different vehicles or machinery with integrated engine and transmission management system faults
- diagnostic equipment for integrated engine and transmission management systems, including:
  - multimeter
  - scan tool
- tools, equipment and materials appropriate for repairing vehicle engine and transmission management systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR146 Remove and refit vehicle batteries

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove and refit lead-acid batteries from a vehicle. It involves preparing for the task, investigating battery types and connections, removing and refitting the battery from a vehicle, and completing workplace processes and documentation.

The unit applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove and refit battery	1.1 Identify task requirements from task instructions, including vehicle battery to be worked on 1.2 Obtain and interpret technical information and safe operating procedures for battery removal and refitting 1.3 Identify potential hazards and risks associated with the task according to workplace health and safety and environmental requirements and report to workplace supervisor 1.4 Implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for battery removal and refitting and establish serviceability according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements
2. Remove battery	2.1 Prepare vehicle for battery removal according to workplace procedures and workplace health and safety and environmental requirements 2.2 Remove battery from vehicle according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 2.3 Inspect battery according to manufacturer specifications, workplace procedures, and workplace health and safety and environmental requirements 2.4 Record battery inspection results according to workplace procedures
3. Refit battery	3.1 Refit battery according to manufacturer specifications, workplace procedures, and workplace health and safety and environmental requirements 3.2 Check vehicle for correct electrical operation according to manufacturer specifications, workplace procedures, and workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Selects and interprets key information from manufacturer specifications, workplace health and safety requirements and workplace procedures to safely remove and refit batteries • Selects and interprets key information from environmental

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SKILL	DESCRIPTION
	requirements and workplace procedures to ensure a clean and safe work site
Oral communication	• Participates effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information
Numeracy	• Interprets numerical information embedded in battery identification codes
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes
Self-management	• Recognises own limitations when selecting and using tools and equipment and seeks timely advice
Problem-solving	• Refers problems that cannot be readily resolved and seeks assistance from workplace supervisor
Technology	• Sets up and operates specialised equipment and tools.

Unit Mapping Information

Supersedes and is equivalent to AURETR046 Remove and refit vehicle batteries.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR146 Remove and refit vehicle batteries

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove and refit the batteries of at least two different operational vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove and refit vehicle batteries, including:
  - battery and vehicle manufacturer specifications
  - safety data sheets (SDS)
- workplace procedures required to remove and refit vehicle batteries, including:
  - battery identification procedures
  - battery polarity and connection methods
  - battery removal and refitting methods, precautions and procedures
  - battery cleaning methods
  - post-fitting inspection procedures
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- key aspects of workplace health and safety (WHS) and environmental requirements when removing and refitting batteries, including procedures for:
  - handling, storing and disposing of used automotive batteries
  - selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear
- use of hand tools and lifting equipment
- key battery types and their uses, including:
  - lead-acid batteries, including deep cycle batteries
  - maintenance-free batteries, including gel batteries and absorbed glass mat batteries
  - lithium-ion batteries.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and refitted batteries, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two operational vehicles with lead-acid batteries
- hand tools for removing and refitting lead-acid batteries.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURETR147 Recharge vehicle batteries

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to recharge a vehicle battery. It involves preparing for the task, investigating battery types and connections, inspecting, testing and charging batteries; and completing work processes and documentation.

The unit applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to recharge battery	1.1 Identify task requirements from task instructions, including vehicle battery to be worked on 1.2 Obtain and interpret technical information and safe operating procedures for battery recharging 1.3 Identify potential hazards and risks associated with the task according to workplace health and safety and environmental requirements and report to workplace supervisor 1.4 Implement control measures in line with workplace policies and procedures

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for battery removal and refitting and establish serviceability according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements
2. Determine battery serviceability	2.1 Clean battery and prepare for inspection and testing according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 2.2 Inspect and test battery according to manufacturer specifications, workplace procedures, and workplace health and safety and environmental requirements 2.3 Record battery condition, serviceability and issues requiring further exploration according to workplace procedures
3. Charge battery	3.1 Identify tools and equipment required for battery charging and establish serviceability according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 3.2 Charge battery according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 3.3 Check post-charging condition of battery and serviceability according to manufacturer specifications and workplace procedures 3.4 Record battery condition, serviceability and issues requiring further exploration according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures.

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently

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SKILL	DESCRIPTION
Reading	• Selects and interprets key information from manufacturer specifications, workplace health and safety requirements and workplace procedures relating to recharging vehicle batteries • Selects and interprets key information from environmental requirements and workplace procedures to ensure a clean and safe work site
Oral communication	• Participates effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information
Numeracy	• Interprets numerical information in battery identification codes and ratings • Uses mathematical operations, to calculate appropriate charge rates • Interprets electrical test equipment, including voltmeters and hydrometers, and reports and records the results using relevant mathematical symbols and conventions (e.g. V for volts)
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes
Self-management	• Recognises own limitations when selecting and using tools and equipment and seeks timely advice
Problem-solving	• Refers problems that cannot be readily resolved and seeks assistance from workplace supervisor
Technology	• Sets up and operates specialised equipment and tools.

Unit Mapping Information

Supersedes and is equivalent to AURETR047 Recharge vehicle batteries.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR147 Recharge vehicle batteries

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- recharge at least two automotive batteries with different cold-cranking amp (CCA) ratings.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove and refit vehicle batteries, including:
  - battery and vehicle manufacturer specifications
  - safety data sheets (SDS)
- workplace procedures required to recharge vehicle batteries, including:
  - battery inspection and testing procedures, including:
    - visual checks
    - hydrometers
    - high-rate discharge testers
    - resting battery voltage
  - battery charging procedures, including:
    - methods for determining charging rate, including reserve capacity (RC) and CCA methods
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- key aspects of workplace health and safety (WHS) and environmental requirements, including:
    - selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear
    - dangers of working with battery testing and charging equipment
    - procedures for handling, storing and disposing of automotive batteries and battery fluid
- key features and operating procedures for automotive battery chargers.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have recharged batteries, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two lead-acid automotive batteries with different CCA ratings
- battery testing equipment, including hydrometer and high-rate discharge tester
- battery charger
- automotive hand tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR149 Apply knowledge of ADAS technology in vehicle pre-repair scans

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to apply knowledge and key features of autonomous driver assistance systems (ADAS) when undertaking a pre-repair scan of a vehicle. It involves identifying ADAS components, undertaking a diagnostic scan of the ADAS present to identify the damage for repair, and evaluating their own knowledge of ADAS, escalating tasks to external repairers. This unit does not involve undertaking direct repairs to the ADAS or the clearing of any diagnostic trouble codes related to these systems, which are to be undertaken by authorised repairers with the required equipment and manufacturer specifications.

The unit applies to those working in the automotive service and repair industry. ADAS technology includes that used in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, motorcycles, and outdoor power equipment.

Licensing, legislative, regulatory or certification requirements may apply to this unit at the time of publication.

Unit Sector

Electrical Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify ADAS components used in vehicle pre-repair scan	1.1 Identify and clarify job requirements from workplace instructions 1.2 Identify information, tools and equipment required for diagnosis activity 1.3 Apply workplace procedures to locate ADAS technology and

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ELEMENTS	PERFORMANCE CRITERIA
	identify its components according to manufacturer specifications 1.4 Identify hazards and environmental issues associated with activity, assess potential risks and implement control measures in line with workplace policies and procedures
2. Identify damage to ADAS components	2.1 Identify information required to identify ADAS faults, including any limitations to workplace procedures for diagnosis and repair activity 2.2 Carry out diagnostic scan of ADAS according to manufacturer specifications and workplace procedures 2.3 Carry out visual inspection of components to identify any damage 2.4 Identify and document diagnostic scan and visual inspections findings with reference to workplace procedures 2.5 Confirm and report diagnosis findings according to workplace procedures, recording any limitations
3. Evaluate knowledge of ADAS	3.1 Check knowledge regularly with colleagues and supervisor to ensure currency and accuracy 3.2 Identify any authorised external repairers for escalation of further diagnosis and repair 3.3 Refer diagnostic findings to required workplace personnel 3.4 Complete pre-repair scan documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but are not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Applies a sequenced plan for a specific task.
Numeracy	• Measure materials and components to determine compliance with specifications.
Oral communication	• Clarifies task instructions • Obtains information from customers and supervisors.
Reading	• Interprets ADAS-related information in manufacturer specifications or equivalent documentation.

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SKILL	DESCRIPTION
Planning and organising	• Plans own work requirements • Escalates actions to required workplace personnel to achieve outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses tools and diagnostic equipment.

Unit Mapping Information

New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR149 Apply knowledge of ADAS technology in vehicle pre-repair scans

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- conduct a pre-repair scan on at least three different vehicles or machinery.

In the course of the above, the candidate must:

- identify and locate the presence of ADAS on each of the vehicles or pieces of machinery
- identify tasks where ADAS technology must be recalibrated by an authorised repairer or dealer.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to apply knowledge of ADAS technology during vehicle pre-repair scans, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to apply knowledge of ADAS technology during vehicle pre-repair scans, including:
  - establishing serviceability of tools and equipment
  - escalation of tasks to authorised external repairers or dealers
  - using diagnostic scan tools and interpreting fault codes
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to repairing ADAS, including procedures for:
    - using specialised tools and equipment
    - selecting and using personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with wearing jewellery while working around electrical systems
- external repairers authorised to diagnose and repair ADAS technology including:
    - original equipment manufacturers
    - dealerships
- key features, components and operating principles of ADAS, including:
    - sonar sensors
    - radar, light detection and ranging (LIDAR) and cameras
- types of ADAS, including:
    - adaptive cruise control
    - collision avoidance
    - blindspot detection
- techniques for reading and interpreting technical information
- common types of faults, including:
    - connector damage
    - terminal damage
    - bent brackets
- visual inspection procedures for damage to ADAS and related components, including:
    - mirror measurements
- diagnostic testing procedures for ADAS and their limitations, including:
    - accessing and interpreting scan tool system data
        - diagnostic trouble codes (DTCs)
        - live data
    - variations in scan tool system data where manufacturer specifications are not present
- safety implications for customers in diagnosing ADAS faults.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the knowledge of ADAS they have applied, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer ADAS specifications or equivalent documentation
- three difference vehicles.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR236 Diagnose and repair electronically controlled suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair electronically controlled suspension systems. The systems used vary based on the work context. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The electronically controlled suspension systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, motorcycles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Electrical Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair electronically controlled suspension system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and

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ELEMENT	PERFORMANCE CRITERIA
	implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose electronically controlled suspension system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair electronically controlled suspension system	3.1 Identify required information for repair activity 3.2 Identify required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electronically controlled suspension system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches electronically controlled suspension system components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electronically controlled suspension measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURETR136 Diagnose and repair electronically controlled suspension systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR236 Diagnose and repair electronically controlled suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the following electronically controlled suspension system components of at least two different vehicles or machinery:
  - ride height sensor circuits
  - wheel speed sensor circuits
  - steering rate sensor circuits
  - ride height control relay circuits
  - air compressor motor control circuits
  - air spring fill-vent solenoid control valve circuits
- remove, refit or replace either a solenoid actuated shock absorber or a load sensing shock absorber from an electronically controlled suspension system in one of the above vehicles or machinery, and retest the system
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - high resistance in an input system
  - loose or damaged connectors or wiring
  - damaged control sensors.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair electronically controlled suspension systems including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation

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- workplace procedures required to diagnose and repair electronically controlled suspension systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing electronically controlled suspension systems, including procedures for:
  - using specialised tools and equipment
  - using appropriate personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with:
    - working with stored energy in springs and torsion bars, including procedures for removing tension from suspension components
    - manual handling heavy suspension system components
- principles of electronically controlled suspension systems and associated components, including:
  - vehicle ride and handling
  - typical vehicle or machinery equipped with electronically controlled suspension systems
- purpose and operation of electronically controlled suspension systems and components, including:
  - adaptive suspension control module
  - control sensors and actuators
  - suspension control module functions, including:
    - control of air spring settings
    - shock damper settings
    - air compressor operation
- diagnostic testing procedures for electronically controlled suspension systems, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - waveforms
  - using diagnostic flow charts
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - resistance and voltage drop tests

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    - open and short circuit tests
    - checking shorts to signal, power circuits and grounds
- repair procedures for electronically controlled suspension systems, including procedures for removing and replacing system components
- post-repair testing procedures for electronically controlled suspension systems, including:
    - DTC clearing procedures
    - static and dynamic performance tests of suspension system.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electronically controlled suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for electronically controlled suspension systems
- two different vehicles or machinery with faults in their electronically controlled suspension systems
- diagnostic equipment for electronically controlled suspension systems, including:
    - multimeter
    - scan tool
- tools, equipment and materials appropriate for repairing electronically controlled suspension systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETU102 Recover vehicle refrigerants

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to recover vehicle air conditioner refrigerants in designated recovery cylinders for disposal according to safety and environmental procedures while observing critical precautions, given that refrigerant may be flammable.

The unit applies to those who work as vehicle dismantlers, automotive parts recycling contractors, and vehicle body repairers in automotive service and repair workplaces who are required to recover automotive air conditioning refrigerants. Automotive air conditioners, including heating, ventilation and air conditioning (HVAC) systems, include those in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing requirements apply to this unit. Users are advised to check with the relevant regulatory authority. An Australian Refrigeration Council accredited (ARCtick) Restricted Refrigerant Recoverer licence is required for those carrying out this work.

Unit Sector

Electrical Technical – Air Conditioning and HVAC

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to recover refrigerant	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret refrigerant recovery information, including Australian automotive code of practice 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify vehicle air conditioning system, components and

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ELEMENT	PERFORMANCE CRITERIA
	refrigerant service ports for refrigerant recovery 1.5 Identify equipment, personal protective equipment (PPE) and firefighting equipment for refrigerant recovery and establish serviceability according to workplace procedures
2. Operate recovery equipment	2.1 Identify vehicle refrigerant with a refrigerant identifier or analyser 2.2 Weigh recovery cylinder and record available capacity and tare weight of cylinder 2.3 Connect recovery equipment to vehicle according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 2.4 Recover refrigerant and transfer into designated recovery cylinder using recovery equipment according to manufacturer specifications, workplace procedures, and workplace health safety and environmental requirements
3. Complete work processes	3.1 Record quantity and details of recovered refrigerant according to workplace procedures and regulatory requirements 3.2 Clear work area according to workplace procedures 3.3 Complete Australian Refrigeration Council accredited (ARCtick) service decal sticker and workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets text, symbols and diagrams in workplace and safe operating procedures and manufacturer specifications
Oral communication	• Asks questions to clarify job requirements
Numeracy	• Matches refrigerant types and identification numbers to workplace procedures and code of practice requirements • Interprets weight measurements, including tare and gross weights • Interprets readings on digital and analogue pressure gauges • Completes numerical data in documentation and charts

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SKILL	DESCRIPTION
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses workplace technology and tools

Unit Mapping Information

Supersedes and is equivalent to AURETU002 Recover vehicle refrigerants.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETU102 Recover vehicle refrigerants

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- recover and identify vehicle refrigerants from three different vehicles or machinery, in which the work must involve one of the following refrigerant types:
  - synthetic greenhouse and ozone depleting (SGOD) refrigerant
  - hydrocarbon (HC) refrigerant
  - hydrofluorocarbon (HFC) refrigerant
  - a mixture of SGOD and HC refrigerant.

In the course of the above work, the candidate must use the following equipment:

- refrigerant hose and coupler
- refrigerant recovery unit
- refrigerant scales
- refrigerant identifier or analyser
- designated and appropriately labelled recovery cylinders.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to recover vehicle refrigerants, including:
  - Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- workplace procedures required to recover vehicle refrigerants, including:
  - recovering vehicles and refrigerants

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    - establishing the serviceability of tools and equipment
    - documentation procedures
    - housekeeping procedures, including:
        - examination of tools and equipment
        - storage of equipment
        - safe shut down and disconnecting recovery equipment
        - safe storage of refrigerant
        - identification, tagging and isolation of faulty equipment
        - safe disposal of materials
        - recycling procedures
- workplace health and safety (WHS) requirements relating to safety requirements for recovering vehicle refrigerants, including procedures for:
    - managing risk of frostbite while working with refrigerants at boiling point
    - working with system lubricants, including carcinogenic oils
    - handling flammable refrigerants
    - selecting and using personal protective equipment (PPE)
    - identifying firefighting equipment
    - identifying refrigerant and oil type, including:
        - service decal sticker
        - testing refrigerant
        - types and location of service ports
    - handling, storing and transporting refrigerant cylinders and recovery cylinders, including:
        - pressure ratings
        - pressure relief devices
        - outlet connection type
- environmental requirements associated with refrigerant recovery and refrigerant waste disposal, including procedures for:
    - preventing loss of refrigerant to the atmosphere
    - storing and transporting refrigerants
- key features of various types of refrigerants and oils found in automotive vehicle and equipment HVAC systems, including:
    - synthetic SGOD refrigerants, such as:
        - chlorofluorocarbons (CFC)
        - hydrofluorocarbons (HFC)
    - HC refrigerants
    - mineral and synthetic refrigerant oils
- key features of refrigerant recovery equipment, including:
    - manifold and gauge set
    - recovery unit

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  - types of recovery cylinders
  - refrigerant analyser
  - vacuum recovery equipment and scales
- procedures for recovering automotive refrigerant, including:
  - testing refrigerant to determine its type
  - connecting manifold and gauge set and recovery unit, including types and location of service ports
  - identifying recovery cylinder suitable to the refrigerant
  - operating recovery unit, including weighing recovery cylinder before and after recovery
  - disconnecting and storing recovery unit and cylinder
- work completion procedures for recovering vehicle refrigerant, including:
  - work area clean-up and maintenance requirements
  - workplace regulatory documentation to be completed
- procedures for completing ARCtick decal sticker, including:
  - name of service organisation
  - ARCtick business authority number
  - quantity of refrigerant added
  - refrigerant and oil type
  - service date
  - technician name and licence number.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to vehicle refrigerant that they have recovered from HVAC systems, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace, parts recycling yard or simulated workplace
- workplace instructions
- PPE and firefighting equipment required when recovering vehicle refrigerants
- Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- three different vehicles or machinery with refrigerant to be recovered
- refrigerant recovery equipment designed for safe operation, including:
  - hose and vehicle couplings

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- refrigerant scales
- refrigerant identifier or analyser
- vehicle refrigerant designated and labelled recovery cylinders
- appropriate hand tools for refrigerant recovery.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards; and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETU103 Service air conditioning and HVAC systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to service air conditioning systems, including heating, ventilation and air conditioning (HVAC) systems, fitted to a range of vehicles and machinery. It involves preparing for the task, carrying out performance testing and correct servicing procedures, performing post-service testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. Automotive air conditioners, in addition to HVAC systems, include those in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery. It does not involve removing, replacing or topping up of refrigerant. The systems used vary depending on the work context.

Licensing requirements apply to this unit. Users are advised to check with relevant regulatory authority. An Australian Refrigeration Council accredited (ARCtick) Refrigerant Handling licence is required for those carrying out this work.

Unit Sector

Electrical Technical – Air Conditioning and HVAC

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to service system	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret servicing information, including manufacturer specifications and Australian automotive code of practice 1.3 Identify servicing option required for the job 1.4 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace

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ELEMENT	PERFORMANCE CRITERIA
	policies and procedures 1.5 Identify tools and equipment required for inspect and servicing activity and establish serviceability according to workplace procedures
2. Test operation of system and components	2.1 Visually check system and report extent of damage according to workplace procedures 2.2 Carry out system performance tests according to manufacturer specifications, workplace procedures, and workplace health and safety and environmental requirements 2.3 Report findings and make recommendations for necessary repairs according to workplace procedures
3. Service system and components	3.1 Read and interpret Australian automotive code of practice regulations 3.2 Service system and components according to manufacturer specifications, workplace procedures and Australian automotive code of practice 3.3 Carry out post-service performance tests according to workplace procedures 3.4 Confirm and report service issue has been resolved according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete Australian Refrigeration Council accredited (ARCtick) service decal sticker and workplace documentation according to workplace procedures.

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILLS	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets text, symbols and diagrams relating to service information in manufacturer specifications, and workplace instructions and procedures

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SKILLS	DESCRIPTION
Oral communication	• Listens to workplace instructions and ask questions to clarify job requirements • Participates in verbal exchanges to report faults, diagnostic and test findings and service repair recommendations to relevant personnel
Numeracy	• Matches refrigerant types and identification numbers to workplace instructions, part lists, manufacturer specifications, and code of practice requirements • Interprets weight measurements, including tare and gross weights • Interprets readings on digital and analogue pressure gauges • Measures temperatures and pressures, and uses basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes. • Ensures tasks are completed within workplace timeframes
Technology	• Uses workplace technology and tools

Unit Mapping Information

Supersedes and is equivalent to AURETU003 Service air conditioning and HVAC systems.

Links

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Assessment Requirements for AURETU103 Service air conditioning and HVAC systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service the air conditioning and HVAC systems of two different vehicles or machinery, in which the work must involve:
  - one air conditioning system, in which the work must include checking system pressure
  - one heating, ventilation and air conditioning (HVAC) system
- complete Australian Refrigeration Council accredited (ARCtick) service decal stickers for the above jobs.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to service air conditioning and HVAC systems, including:
  - air conditioning and HVAC system manufacturer specifications
  - Australian automotive code of practice: control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- workplace procedures required to service air conditioning and HVAC systems, including:
  - servicing air conditioning and HVAC system procedures
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to servicing air conditioning and HVAC systems, including procedures for:
    - working with refrigerants at boiling point given risk of frostbite
    - working with system lubricants, including carcinogenic oils
    - identifying flammable refrigerants
    - selecting and using personal protective equipment (PPE)
    - identifying firefighting equipment
- environmental requirements relating to servicing air conditioning and HVAC systems, including procedures for:
    - preventing loss of refrigerant to the atmosphere
    - handling materials and refrigerant recovery equipment
- identification and function of major air conditioning and HVAC system components, including:
    - compressor
    - condenser
    - receiver-dryer
    - expansion valve
    - evaporator
    - blower fan
- principles of operation of air conditioning and HVAC systems, including transferring heat from cabin to exterior using refrigerant gas
- workplace procedures for recording and reporting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - freeze frame data
    - waveforms
- types of air conditioning and HVAC systems, including:
    - single zone and multi-zone
    - climate control
- inspection procedures for air conditioning and HVAC systems, including:
    - conducting visual, aural and functional assessments for:
        - component damage and wear
        - component corrosion
        - vacuum and leaks
    - system performance testing, including:
        - checking blower fan output
        - checking engine fan output
        - checking filters
- service and adjustment procedures of air conditioning and HVAC systems, including:

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  - checking and adjusting compressor drive belts
  - changing filters
  - clearing evaporator water outlet
  - cleaning condenser
- post-service testing procedures of air conditioning and HVAC systems, including:
  - system performance testing
  - using thermometers to check vent temperatures
- procedures for completing those components of the ARCtick service decal sticker present in the air conditioning and HVAC systems of the vehicles or machinery described in the performance evidence, including:
  - name of service organisation
  - ARCtick business authority number
  - quantity of refrigerant added
  - refrigerant and oil type
  - service date
  - technician name and licence number.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air conditioning and HVAC systems that they have serviced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive service repair workplace or simulated workplace
- workplace instructions
- air conditioning and HVAC system manufacturer specifications
- Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- two different vehicles or machinery with air conditioning and HVAC systems requiring servicing
- tools, equipment and materials appropriate for servicing air conditioning and HVAC systems, including:
  - thermometer
  - manifold and gauge set.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards; and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Links

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AURETU104 Diagnose and repair air conditioning and HVAC components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the air conditioning systems, including heating, ventilation and air conditioning (HVAC) systems, fitted to a range of vehicles and machinery for passenger convenience and comfort. The systems used vary based on the work context. It involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in an automotive service and repair industry. Automotive air conditioners, in addition to HVAC systems, include those in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing requirements apply to this unit. Users are advised to check with relevant regulatory authority. An Australian Refrigeration Council accredited (ARCtick) Refrigerant Handling licence is required for those carrying out this work.

Unit Sector

Electrical Technical – Air Conditioning and HVAC

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair air conditioning and HVAC system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Select diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose air conditioning and HVAC system	2.1 Carry out diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through examination of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Operate recovery equipment	3.1 Identify vehicle refrigerant with a refrigerant identifier or analyser 3.2 Weigh recovery cylinder and record available capacity and tare weight of cylinder 3.3 Connect recovery equipment to vehicle according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 3.4 Recover refrigerant and transfer into designated recovery cylinder using recovery equipment according to manufacturer specifications, workplace procedures, and workplace health safety and environmental requirements
4. Repair air conditioning and HVAC system	4.1 Identify required information for repair activity 4.2 Identify required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 4.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.4 Recharge system with required refrigerant gas according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 4.5 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials

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ELEMENT	PERFORMANCE CRITERIA
	according to workplace procedures 5.3 Complete Australian Refrigeration Council accredited (ARCtick) service decal sticker and workplace documentation according to workplace procedures.

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILLS	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Interprets text, symbols and wiring diagrams relating to diagnostic and repair information from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches refrigerant types and identification numbers to workplace instructions, parts lists, manufacturer specifications, code of practice and regulatory requirements • Interprets weight measurements, including tare and gross weights • Interprets readings on pressure gauges • Measures temperatures and pressures and uses mathematical operations, to calculate deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised equipment.

Unit Mapping Information

Supersedes and is equivalent to AURETU004 Diagnose and repair air conditioning and HVAC systems.

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Links

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Assessment Requirements for AURETU104 Diagnose and repair air conditioning and HVAC components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the air conditioning and heating, ventilation and cooling (HVAC) systems of two different vehicles or machinery, in which the work must involve removing, refitting or replacing two of the following:
  - condenser
  - evaporator
  - expansion valve
  - compressor
  - heater box
- remove, refit or replace two different types of refrigerant.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair air conditioning and HVAC systems, including:
  - information provided by customers and supervisors
  - air conditioning and HVAC system manufacturer specifications
  - Australian automotive code of practice: control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- workplace procedures required to diagnose and repair air conditioning and HVAC systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:

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    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing air conditioning and HVAC systems, including procedures for:
    - working with refrigerants at boiling point given risk of frostbite
    - working with system lubricants, including carcinogenic oils
    - identifying refrigerant and oil type, including:
        - service decal sticker
        - testing refrigerant
        - types and location of service ports
    - handling, storing and transporting refrigerant cylinders and recovery cylinders, including:
        - pressure ratings
        - pressure relief devices
        - outlet connection type
    - selecting and using personal protective equipment (PPE)
    - emergency procedures and incident management requirements and procedures
    - handling flammable refrigerants
    - identifying and using fire safety equipment
- procedures for recovering automotive refrigerant, including:
    - testing refrigerant to determine its type
    - connecting manifold and gauge set and recovery unit, including types and location of service ports
    - identifying recovery cylinder suitable to the refrigerant
    - operating recovery unit, including weighing recovery cylinder before and after recovery
    - disconnecting and storing recovery unit and cylinder
- system performance testing, including:
    - using manifold gauges and thermometers to check system pressures and vent temperatures
    - checking blower fan output
    - checking engine fan output
    - checking filters
- environmental requirements relating to servicing air conditioning and HVAC, including procedures for:
    - preventing loss of refrigerant to the atmosphere
    - handling materials and refrigerant recovery equipment
- air conditioning and HVAC system principles, including:

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- heat transfer principles, including convection, conduction and radiation
- functions of the following air conditioning components:
  - compressor
  - condenser
  - receiver-drier
  - evaporator
  - blower fan
  - refrigerant
- functions of the following heating components:
  - radiator
  - thermostat
  - radiator and heater hoses
  - heater tap
  - heater box
- single zone and multi-zone vehicle layouts

- purpose and operation of air conditioning and HVAC systems and components, including:
  - high pressure and low pressure sides of air conditioning systems
  - compressors, including:
    - axial type, including variable capacity compressors
    - scroll type
    - vane type
  - electromagnetic clutches
  - condensers
  - receiver-dryer, including filters and desiccants
  - expansion valves, including capillary tube
  - evaporator
  - thermostat
  - refrigerants, including R12, R134, R1234yf and hydrocarbon refrigerants
  - compressor oils
  - air conditioner and heating controls, including levers and ducting
  - air conditioner and heating electrical circuits and sensors, including:
    - high and low pressure switches
    - pressure relief valves
    - temperature sensors
  - climate control systems
- diagnostic testing procedures for air conditioning and HVAC systems, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - freeze frame data

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    - waveforms
  - using diagnostic flow charts
  - using manifold gauges on systems with different refrigerants, including analysis of high and low pressure readings in conjunction with temperature probes
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - resistance and voltage drop tests
    - open and short circuit tests
    - checking shorts to signal, power circuits and grounds
- repair procedures for air conditioning and HVAC systems, including procedures for:
  - using manifold gauges to discharge, evacuate and charge system refrigerants
  - removing and replacing system components
- post-repair testing procedures for air conditioning and HVAC systems, including procedures for checking for:
  - refrigerant leaks
  - heater core and system water coolant leaks
  - ambient temperature
  - centre vent temperature
  - condenser and suction line temperature
  - manifold gauge pressure readings
- static and dynamic performance tests of air conditioning and HVAC systems, including checking:
  - ambient temperature
  - vent temperature
  - condenser and suction line temperature
- procedures for completing ARCtick service decal sticker, including:
  - name of service organisation
  - ARCtick business authority number
  - quantity of refrigerant added
  - refrigerant and oil type
  - service date
  - technician name and licence number.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air conditioning and HVAC systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for air conditioning and HVAC systems
- Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- ARCtick service decal stickers
- procedures for servicing and adjusting vehicle air conditioning and HVAC systems
- two different vehicles or machinery with air conditioning and HVAC system faults
- minimum of two different types of refrigerant
- diagnosis and repair equipment for air conditioning and HVAC systems, including:
  - manifold and gauge set
  - recovery unit
  - vacuum pump
  - electronic leak detector
  - nitrogen cylinder and regulator
  - multimeter
  - electronic scales
  - oil injector
  - infra-red thermometer
  - temperature probe
  - scan tool.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards; and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETU105 Retrofit automotive air conditioning and HVAC systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to retrofit automotive air conditioning systems, including heating, ventilation and air conditioning (HVAC) systems, fitted to a range of vehicles and machinery. It involves preparing for the task, selecting the correct de-gas procedure, carrying out the retrofit and associated modifications, performing post-retrofit testing, and completing workplace processes and documentation. Air conditioning systems may contain a mixture of both natural and flammable synthetic refrigerants that are difficult to accurately identify and safely recover. To minimise the possibility of ignition, the procedures and equipment used when recovering refrigerants must be those required for flammable refrigerants.

The unit applies to those who work in the automotive service and repair industry. Automotive air conditioners, including HVAC systems, include those in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing requirements apply to this unit. Users are advised to check with relevant regulatory authority. An Australian Refrigeration Council accredited (ARCtick) Refrigerant Handling licence is required for those carrying out this work.

Unit Sector

Electrical Technical – Air Conditioning and HVAC

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to retrofit system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for retrofit activity, including manufacturer specifications and Australian automotive code

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ELEMENT	PERFORMANCE CRITERIA
	of practice 1.3 Identify refrigerant required according to workplace procedures and workplace health and safety and environmental requirements 1.4 Identify retrofit option required for the job 1.5 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace procedures 1.6 Identify tools and equipment required for inspect and servicing activity and establish serviceability according to workplace procedures
2. De-gas system	2.1 De-gas system according to manufacturer specifications, Australian automotive code of practice, workplace procedures, and workplace health and safety and environmental requirements 2.2 Refrigerant is recovered into required refrigerant recovery cylinder according to manufacturer specifications, Australian automotive code of practice, workplace procedures, and workplace health and safety and environmental requirements 2.3 Measure oil recovered and determine replacement volume
3. Retrofit system	3.1 Carry out air conditioning retrofit procedures according to manufacturer specifications, Australian automotive code of practice, workplace procedures, and workplace health safety and environmental requirements 3.2 Pressure test system and confirm there are no leaks according to manufacturer specifications, Australian automotive code of practice, workplace procedures, and workplace health and safety and environmental requirements 3.3 Evacuate system according to manufacturer specifications, Australian automotive code of practice, workplace procedures, and workplace health and safety and environmental requirements 3.4 Re-gas system with refrigerant gas and lubricating oil according to manufacturer specifications, Australian automotive code of practice, and workplace procedures 3.5 Carry out post-retrofit testing according to workplace procedures

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ELEMENT	PERFORMANCE CRITERIA
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete Australian Refrigeration Council accredited (ARCtick) service decal sticker and workplace documentation according to workplace procedures.

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets text, symbols and diagrams relating to retrofit and associated modification information from manufacturer specifications, and workplace instructions and procedures • Interprets key requirements of Australian automotive code of practice relating to retrofitting air conditioning and HVAC systems
Writing	• Fills out workplace documentation legibly, including ARCtick stickers, when reporting test findings, making retrofit recommendations, and recording parts and material used
Oral communication	• Listens to workplace instructions and asks questions to clarify job requirements
Numeracy	• Matches refrigerant types and identification numbers to workplace instructions, vehicle and component part lists, and code of practice requirements • Interprets weighting measurements, including tare and gross weights • Interprets readings on digital and analogue pressure gauges • Measures temperatures and pressures, and uses basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes

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SKILL	DESCRIPTION
Technology	• Uses workplace technology and tools.

Unit Mapping Information

Supersedes and is equivalent to AURETU005 Retrofit and modify air conditioning and HVAC systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETU105 Retrofit automotive air conditioning and HVAC systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- retrofit the air conditioning and HVAC systems of two different vehicles or machinery, in which the work must include changing the type of refrigerant.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to retrofit automotive air conditioning and HVAC systems, including:
  - air conditioning and HVAC system manufacturer specifications
  - Australian automotive code of practice: control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- workplace procedures required to retrofit automotive air conditioning and HVAC systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to retrofitting air conditioning and HVAC systems, including procedures for:
  - working with refrigerants at boiling point given risk of frostbite

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  - working with system lubricants, including carcinogenic oils
  - identifying refrigerant and oil type, including:
    - service decal sticker
    - testing refrigerant
    - types and location of service ports
  - handling, storing and transporting refrigerant cylinders and recovery cylinders, including:
    - pressure ratings
    - pressure relief devices
    - outlet connection type
  - identifying and handling refrigerants, including hydrocarbon (HC) refrigerants
  - selecting and using personal protective equipment (PPE)
  - identifying firefighting equipment
- environmental requirements, including procedures for:
  - preventing loss of refrigerant to the atmosphere
  - handling materials and refrigerant recovery equipment
- key requirements of federal Ozone Protection and Synthetic Greenhouse Gas Management Regulations, including refrigerant handling licence and refrigerant trading authorisation
- purpose and operation of automotive air conditioning and HVAC systems and components, including:
  - high pressure and low pressure sides of air conditioning systems
  - compressors, including:
    - piston, scroll and rotary vane compressors
    - electric compressors
    - variable displacement compressors
    - clutchless compressors electromagnetic clutches
  - condensers
  - receiver-dryers, including filters and desiccants
  - expansion valves, including capillary tubes
  - evaporators
  - thermostats
  - refrigerants, including R12, R134a, R1234yf, and hydrocarbon blends
  - compressor oils
  - air conditioner and heating controls, including levers and ducting
  - air conditioner and heating electrical circuits and sensors, including:
    - high and low pressure switches
    - pressure relief valves
    - temperature sensors
  - climate control systems

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- procedures for retrofitting and associated modifications for air conditioning and HVAC systems, including:
  - determining original system fitted to vehicle, including refrigerant and oil type and types of components
  - determining appropriate retrofit and associated modification options, including:
    - determining required system performance output
    - component replacement, including O rings and seals
    - refrigerant and oil selection
  - procedures for removing and replacing system components
- procedures for changing system refrigerant, including:
  - changing refrigerant gas from R12 to R134a:
    - receiver dryer filter replacement
    - change system fittings for manifold gauge attachment
    - change oil type
  - reasons why R134a refrigerant must not be retrofitted to R1234yf
  - reasons why R134a refrigerant must not be retrofitted to blends of hydrocarbons
- procedures for recovering automotive refrigerant, including:
  - testing refrigerant to determine its type
  - connecting manifold and gauge set and recovery unit, including types and location of service ports
  - identifying recovery cylinder appropriate to the refrigerant
  - operating recovery unit, including weighing recovery cylinder before after recovery
  - disconnecting and storing recovery unit and cylinder
- procedures for re-gassing air conditioning and HVAC systems, including:
  - testing system for leaks using vacuum testing and dry nitrogen pressure testing
  - evacuating the system using a vacuum pump and vacuum gauge
  - using manifold gauges, refrigerant scales or charging station to charge system
- post-retrofit testing procedures for air conditioning and HVAC systems, including procedures for checking for:
  - refrigerant leaks
  - heater core and system water coolant leaks
  - system performance is operating to manufacturer specifications
  - reported pre-modification issue has been resolved
  - no other faults are present
- static and dynamic performance tests of air conditioning and HVAC systems, including checking:
  - ambient temperature
  - vent temperature
  - condenser and suction line temperature.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air conditioning and HVAC systems that they have retrofitted, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- vehicle or machinery air conditioning and HVAC system manufacturer specifications
- Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- two different vehicles or machinery with air conditioning and HVAC systems requiring retrofitting
- retrofit and testing equipment for air conditioning and HVAC systems, including:
  - manifold and gauge set
  - recovery unit and recovery cylinder
  - vacuum pump and gauge
  - leak detector
  - refrigerant analyser
  - refrigerant
  - refrigerant scales or charging station
  - dry nitrogen cylinder and gauge.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards; and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETU106 Diagnose complex faults in air conditioning and HVAC systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in air conditioning and heating, ventilation and air conditioning (HVAC) systems and identify the repair action necessary to restore system performance. The systems used vary based on the work context. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations.

Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those who work in an automotive service and repair industry. The air conditioning and HVAC systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels or mobile plant machinery.

Licensing requirements apply to this unit. Users are advised to check with the relevant regulatory authority. An Australian Refrigeration Council accredited (ARCtick) Refrigerant Handling licence is required for those carrying out this work.

Unit Sector

Electrical Technical – Air Conditioning and HVAC

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm	1.1 Identify job requirements from workplace instructions

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ELEMENT	PERFORMANCE CRITERIA
the work requirement	1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnosis activity, assess potential risks and implement control measures in line with workplace policies and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles, vessels or machinery

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SKILL	DESCRIPTION
Reading	• Organises and interprets technical information from manufacturer and workshop literature when seeking air conditioning and HVAC system specifications and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures air conditioning and HVAC system components and uses mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes

Technology	• Uses specialised diagnostic equipment, including:
	  • manifold and gauge sets
	  • leak detectors
	  • digital multimeters
	  • thermometers.

Unit Mapping Information

Supersedes and is equivalent to AURETU006 Diagnose complex faults in air conditioning and HVAC systems.

Links

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Assessment Requirements for AURETU106 Diagnose complex faults in air conditioning and HVAC systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in the air conditioning and heating, ventilation and air conditioning (HVAC) systems of two different vehicles, vessels or machinery in which the work must involve developing a testing strategy to diagnose the cause of at least two of the following complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems
- develop testing strategies in the course of the above work for faults in the following systems:
  - multiple zone systems
  - electric controlled compressor systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in air conditioning and HVAC systems, including:
  - air conditioning and HVAC system manufacturer specifications
  - Australian automotive code of practice: control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners, procedures for preventing loss of refrigerant to atmosphere
  - communicating with customers and supervisors
- workplace procedures required to diagnose complex faults in air conditioning and HVAC systems, including:

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  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in air conditioning and HVAC systems, including procedures for:
  - identifying hazards and controlling risks associated with wearing jewellery while working around high electrical currents
  - working with refrigerants at boiling point given risk of frostbite
  - working with system lubricants, including carcinogenic oils
  - selecting and using personal protective equipment (PPE)
  - emergency procedures and incident management requirements and procedures
  - handling flammable refrigerants
  - preventing loss of refrigerant to environment
  - identifying and using fire safety equipment
- environmental requirements relating to air conditioning and HVAC systems, including procedures for:
  - preventing loss of refrigerant to the atmosphere
  - handling materials and refrigerant recovery equipment
- types of complex faults relating to air conditioning and HVAC systems, including:
  - intermittent
  - multi-system
  - introduced as a result of system repair
  - indirect, caused by the influence of external systems
- types and function of air conditioning and HVAC systems, including:
  - climate control systems
  - single and dual zone systems
  - electric controlled compressor systems
- testing procedures for air conditioning and HVAC systems, including:
  - vehicle HVAC performance testing
  - component failure analysis
  - vehicle continuous and non-continuous monitored systems
- procedures for using testing and diagnostic tools and equipment, including:
  - scan tools
  - oscilloscopes
  - manifold and gauge sets

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  - vacuum pumps
  - leak detectors
  - nitrogen cylinder and regulators
  - digital vacuum gauges (vacrometer)
  - digital multimeters
  - infra-red thermometers (pyrometer)
- key features and limitations of diagnostic testing equipment required to diagnose complex faults in vehicle air conditioning and HVAC systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air conditioning and HVAC systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer air conditioning and HVAC system specifications
- two different vehicles, vessels or machinery with complex faults in their air conditioning and HVAC systems
- testing and diagnostic tools and equipment appropriate for diagnosing and repairing complex faults in air conditioning and HVAC systems, including:
  - manifold and gauge sets
  - leak detectors
  - digital multimeters
  - thermometers
  - tools, equipment and materials appropriate for diagnosing complex faults in air conditioning and HVAC systems.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards; and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Links

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AURHTB101 Diagnose and repair heavy vehicle air braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the air braking systems of heavy vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The air braking systems include those in agricultural machinery, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Brakes

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair heavy vehicle air braking system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy vehicle air braking system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair heavy vehicle air braking system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures braking system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses measuring and diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTB001 Diagnose and repair heavy vehicle air braking systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTB101 Diagnose and repair heavy vehicle air braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in three heavy vehicle air braking systems as follows:
  - one disc braking system, in which the work must involve removing and refitting or replacing the brake actuators, disc pads and disc rotors
  - one drum braking system, in which the work must involve removing and refitting or replacing the brake actuators, brake shoes and drums
  - one air braking system, in which the work must involve removing and refitting or replacing at least one of the following:
    - air compressor, delivery and storage components
    - slack adjusters
    - pneumatic valve
    - electro-pneumatic valve and electronic control circuits.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy vehicle air braking systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy vehicle air braking systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- Australian Design Rules ADR35 and ADR38 relating to repairing heavy vehicle brakes, including:
    - key features and differences of both American and European braking systems
- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy vehicle air braking systems, including procedures for:
    - working safely with stored energy in springs and high air pressure systems
    - managing and controlling brake dust
    - removing and refitting wheel assemblies
- environmental requirements relating to diagnosing and repairing heavy vehicle air braking systems, including procedures for trapping, storing and disposing of hazardous materials and substances released from braking systems, including brake dust and fibres
- operating principles of heavy vehicle air braking systems and associated components, including:
    - levers
    - friction
    - pneumatics
    - electronics
- purpose and operation of heavy vehicle air braking systems and components, including:
    - disc braking systems
    - drum braking systems
    - air compressors, air storage, air dryers and valves
    - brake actuators
    - foot valves
    - air control valves
    - manual and automatic slack adjusters
    - trailer brake valves
    - pneumatic and electronic control circuits and valves
- diagnostic testing procedures for heavy vehicle air braking systems, including procedures for:
    - friction material wear
    - drum brake component serviceability
    - disc brake component serviceability
    - air pressure testing
    - air control system testing
    - air brake component inspection and evaluation
    - brake system stationary and mobile performance tests
- repair procedures for heavy vehicle air braking systems, including:

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- procedures for removing, replacing and adjusting:
  - wheel end components, including disc braking systems and drum braking systems
  - air compressors, air storage, air dryers and valves
  - brake actuators
  - foot valves
  - manual and automatic slack adjusters
  - trailer brake valves
  - pneumatic and electronic control circuits and valves
- dismantling, repairing, reassembling and adjusting systems
- post-repair testing procedures for heavy vehicle air braking systems including stationary and mobile performance tests.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle air braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer braking system specifications
- two different heavy vehicles with faults in the air braking systems specified in the performance evidence
- diagnostic equipment for heavy vehicle air braking systems
- Australian Design Rules ADR35 and ADR38
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle air braking systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTB106 Diagnose complex faults in heavy commercial vehicle braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in heavy commercial vehicle braking systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those who work in the automotive service and repair industry. The heavy commercial vehicle braking systems include those of trucks or buses.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Brakes

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery
Reading	• Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking braking system specifications and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors

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SKILL	DESCRIPTION
Numeracy	• Measures braking system components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring equipment • Uses specialised testing equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTB006 Diagnose complex faults in heavy commercial vehicle braking systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTB106 Diagnose complex faults in heavy commercial vehicle braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in each of the following heavy commercial vehicle braking systems:
  - air braking system
  - air over hydraulic braking system
  - anti-lock braking system
- the work must involve developing a testing strategy to diagnose the cause of at least two of the following complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in heavy commercial vehicle braking systems, including:
  - heavy commercial vehicle braking system manufacturer specifications
- workplace procedures required to diagnose complex faults in heavy commercial vehicle braking systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in heavy commercial vehicle braking systems, including procedures for:
    - working with stored energy, including pneumatic pressure and spring energy
    - handling and controlling brake dust and brake fluids
- environmental requirements, including procedures for trapping, storing and disposing of hazardous materials and substances released from braking systems, including hydraulic fluid, brake fluid and brake fibres
- types of complex faults relating to heavy commercial vehicle braking systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types and operation of heavy commercial vehicle braking systems, including:
    - air braking systems
    - hydraulic braking systems
    - air over hydraulic braking systems
    - anti-lock braking systems
- testing procedures for heavy commercial vehicle braking systems, including procedures for:
    - vehicle dynamic and static testing
    - abnormal noise analysis
    - component failure analysis
- key features and limitations of diagnostic testing equipment required to diagnose complex faults in heavy commercial vehicle braking systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - freeze frame data
    - waveforms
    - vehicle continuous and non-continuous monitored systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy commercial vehicle braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer heavy commercial vehicle braking system specifications
- three different heavy commercial vehicles with complex faults in the braking systems specified in the performance evidence
- heavy commercial vehicle braking system diagnostic equipment, including:
  - pressure gauge
  - scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in heavy commercial vehicle braking systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTB107 Diagnose and repair heavy commercial vehicle electronic braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the electronically controlled braking systems of heavy commercial vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The heavy commercial vehicle electronic braking systems include those in heavy commercial vehicles. This unit does not apply to agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Brakes

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair heavy commercial vehicle electronic braking system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and

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ELEMENT	PERFORMANCE CRITERIA
	implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy commercial vehicle electronic braking system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair heavy commercial vehicle electronic braking system	3.1 Identify required information for repair activity 3.2 Identify required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to heavy commercial vehicle electronic braking system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Matches heavy commercial vehicle electronic braking system components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle heavy commercial vehicle electronic braking measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring and diagnostic tools and equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTB007 Diagnose and repair heavy commercial vehicle electronic braking systems.

Links

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Assessment Requirements for AURHTB107 Diagnose and repair heavy commercial vehicle electronic braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the electronic components of at least two different heavy commercial vehicle electronic braking systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- techniques for reading and interpreting technical information, including circuit types, diagrams and symbols
- methods to locate and interpret information required to diagnose and repair heavy commercial vehicle electronic braking systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - Australian Design Rules ADR35 and ADR38 relating to repairing heavy vehicle brakes
- workplace procedures required to diagnose and repair heavy commercial vehicle electronic braking systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy commercial vehicle electronic braking systems, including procedures for working safely with high air pressure systems and an electronically controlled actuator
- environmental requirements relating to diagnosing and repairing heavy commercial vehicle electronic braking systems
- operating principles of heavy commercial vehicle electronic braking systems and associated components, including:
  - electronic systems
  - pneumatic systems
- purpose and operation of heavy commercial vehicle electronic braking systems and components, including:
  - electronic control unit (ECU)
  - dual circuit pneumatic foot pedal control valve with electronic position sensing
  - front circuit electric over air modulation and relay valve
  - rear circuit electric over air modulation and relay valve
  - wheel speed sensors and pole wheel
  - tractor protection air valve
  - pressure sensor in airbag system or load sensor
- diagnostic testing procedures for heavy commercial vehicle electronic braking systems that comply with manufacturer specifications, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - waveforms
  - using diagnostic flow charts
- repair procedures for heavy commercial vehicle electronic braking systems that comply with manufacturer specifications, including procedures for removing, replacing and adjusting braking system components
- post-repair testing procedures for heavy commercial vehicle electronic braking systems, including static and dynamic performance tests of electronic braking system.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle electronic braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer braking system specifications
- two different heavy commercial vehicles with faults in their electronic braking systems
- diagnostic equipment for heavy commercial vehicle electronic braking systems
- Australian Design Rules ADR35 and ADR38
- tools, equipment and materials appropriate for repairing and adjusting heavy commercial vehicle electronic braking systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTD102 Diagnose and repair heavy vehicle steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair heavy vehicle steering systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The steering systems include those in heavy commercial vehicles. This unit does not apply to agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Steering and Suspension

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair heavy vehicle steering system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy vehicle steering system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair heavy vehicle steering system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Identifies steering system information in degrees and metric units of measurement • Measures steering system components • Uses mathematical operations • Calculates tolerances and deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTD002 Diagnose and repair heavy vehicle steering systems.

Links

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Assessment Requirements for AURHTD102 Diagnose and repair heavy vehicle steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least one of the following heavy commercial vehicle steering systems:
  - electronically assisted steering
  - hydraulic power assisted steering
- diagnose and repair a fault in at least three of the following heavy commercial vehicle steering components:
  - power steering pump
  - hydraulic valves
  - electronic valves
  - tie rods and linkages
  - king pin
  - front wheel bearings.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy vehicle steering systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy vehicle steering systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures

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    - housekeeping procedures, including:
        - examination of tools and equipment
        - storage of equipment
        - identification, tagging and isolation of faulty equipment
        - disposal of excess materials
        - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy vehicle steering systems, including procedures for working with high pressure steering systems
- environmental requirements relating to diagnosing and repairing heavy vehicle steering systems, including procedures for trapping, storing and disposing of power steering hydraulic fluid released from steering systems
- purpose and operation of heavy vehicle steering systems and components, including:
    - manual steering systems, including:
        - steering box
        - steering column
        - tie rods and linkages
        - king pins
        - wheel bearings
    - hydraulic power assisted steering systems, including:
        - integral piston steering box
        - power steering pump
        - hydraulic valves
        - electronic valves
        - twin axle steering systems
        - electronically assisted steering systems
- identification, function and basic operating principles of steering angles, including:
    - toe-in and toe-out
    - toe-out on turns
    - caster
    - camber
    - Ackermann principle of steering
    - steering axis inclination
- diagnostic testing procedures for heavy vehicle steering systems, including procedures for analysing:
    - operational testing
    - hydraulic steering system testing
    - analysing component wear analysis
- repair procedures for heavy vehicle steering systems, including procedures for removing, replacing and adjusting:
    - power steering pump

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  - steering box
  - steering column
  - king pin
  - electronically assisted steering
  - tie rods and linkages
  - wheel bearings
- post-repair testing procedures for heavy commercial vehicle steering systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy commercial vehicle steering systems or components that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer steering system specifications
- heavy commercial vehicle with faults in the power assisted steering systems and components specified in the performance evidence
- diagnostic equipment for heavy commercial vehicle steering systems
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle steering systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTD103 Diagnose and repair heavy vehicle suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair heavy vehicle suspension systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The suspension systems include those in heavy commercial vehicles. This unit does not apply to agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Steering and Suspension

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair heavy vehicle suspension system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy vehicle suspension system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair heavy vehicle suspension system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Identifies suspension system information in degrees and metric units of measurement • Measures suspension system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTD003 Diagnose and repair heavy vehicle suspension systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTD103 Diagnose and repair heavy vehicle suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in:
  - the following two heavy commercial vehicle suspension systems:
    - leaf spring suspension
    - air spring suspension
  - at least one of the following heavy commercial vehicle suspension systems:
    - equaliser beam suspension
    - torsion bar suspension
    - electronically controlled suspension.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy vehicle suspension systems including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy vehicle suspension systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy vehicle suspension systems, including identifying hazards and controlling risks associated with:
    - working with stored energy in spring, air springs, and torsion bars, including procedures for working with suspension components under tension
    - lifting, supporting and manual handling heavy suspension systems
- environmental requirements relating to diagnosing and repairing heavy vehicle suspension systems
- principles of heavy vehicle suspension systems and associated components, including:
    - rigid and independent suspensions
    - sprung and unsprung mass
    - ride height
    - spring dampers
    - spring types
- purpose and operation of heavy vehicle suspension systems and components, including:
    - air spring suspension
    - leaf spring suspension
    - front suspension
    - rear suspension, including single and tandem axle
    - equaliser beam suspension
    - torsion bar suspension
    - electronically controlled suspension
- equipment for diagnostic testing procedures, including scan tools
- diagnostic testing procedures for heavy vehicle suspension systems, including procedures for analysing:
    - component wear
    - checking axle alignment
    - checking fluid leaks
    - checking air leaks
    - checking ride height
    - control system tests
- repair procedures for heavy vehicle suspension systems, including procedures for:
    - removing, repairing and replacing suspension components, and springs and spring dampers
    - aligning axles
- post-repair testing procedures for heavy vehicle suspension systems.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer suspension system specifications
- heavy commercial vehicles with faults in the different suspension systems listed in the performance evidence
- diagnostic equipment for heavy commercial vehicle suspension systems
- tools, equipment and materials appropriate for repairing and adjusting heavy commercial vehicle suspension systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTD104 Carry out heavy vehicle wheel alignment operations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to carry out heavy vehicle wheel alignment operations. It involves identifying and confirming work requirements, preparing for the work, carrying out pre-alignment inspection, performing heavy vehicle wheel alignment, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The wheel alignment operations include those of agricultural machinery, heavy commercial vehicles or mobile plant machinery. The unit does not apply to light vehicles, light commercial vehicles or motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Mechanical – Heavy Vehicle Technical – Steering and Suspension

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to carry out heavy vehicle wheel alignment	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret heavy vehicle wheel alignment pre-check information 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for the job and establish serviceability according to workplace procedures

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ELEMENT	PERFORMANCE CRITERIA
2. Carry out heavy vehicle wheel alignment pre-checks	2.1 Test vehicle according to workplace procedures and workplace health and safety requirements 2.2 Complete vehicle wheel alignment pre-check according to manufacturer specifications, workplace procedures, and workplace health and safety requirements 2.3 Identify and report faults according to workplace procedures
3. Carry out vehicle wheel alignment activities	3.1 Obtain and interpret heavy vehicle wheel alignment information 3.2 Connect wheel alignment measuring equipment to vehicle according to manufacturer specifications and workplace procedures 3.3 Carry out wheel alignment and record readings 3.4 Carry out corrective adjustments to wheel according to manufacturer specifications, workplace procedures, and workplace health and safety requirements 3.5 Re-check wheel alignment and confirm accuracy of adjustments 3.6 Record post-adjustment wheel alignment readings according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets safe operating procedures for wheel alignment equipment from workplace signs and procedures and manufacturer specifications • Interprets information from manufacturer specifications and workshop literature when seeking vehicle wheel alignment specifications and procedures

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SKILL	DESCRIPTION
Numeracy	• Measures steering and suspension system components • Uses basic mathematical operations, including addition, subtraction and understanding angles in degrees • Calculates distances, tolerances and deviations from manufacturer specifications • Understands measurements in metric and imperial units of measurement
Planning and organising	• Identifies and prepares tools and equipment to allow the job to be completed without time wastage • Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTD004 Carry out heavy vehicle wheel alignment operations.

Links

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Assessment Requirements for AURHTD104 Carry out heavy vehicle wheel alignment operations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- align wheels on all steerable axles of at least three different heavy vehicles.

In the course of the above, the candidate must measure each of the following steering angles, and make adjustments where required by job specifications:

- camber
- caster
- king pin inclination (KPI)
- toe (toe-in and toe-out)
- toe-out on turns.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out heavy vehicle wheel alignment, including:
  - manufacturer specifications and procedures
- workplace procedures required to carry out heavy vehicle wheel alignment, including:
  - establishing serviceability of tools and equipment
  - pre and post wheel alignment procedures
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to heavy vehicle wheel alignment operations, including:
    - procedures for raising and supporting heavy vehicles or machinery
- steering geometry and wheel alignment angles, including:
    - Ackermann principle of steering
    - camber
    - caster
    - KPI
    - toe-in and toe-out
    - toe-out on turns
    - steering axis inclination
    - two wheel and twin four wheel steer
- vehicle pre-alignment inspection procedures, including:
    - analysing tyre wear
    - inflating tyre
    - adjusting wheel bearing
    - inspecting steering and suspension
    - determining wheel run-out
    - determining vehicle height
    - checking chassis and axle alignment
- types and operation of wheel alignment systems, including:
    - laser aligners
    - visual aligners
    - camera aligners
- procedures for measuring and adjusting steering angles, including:
    - camber
    - caster
    - toe-in and toe-out
    - toe-out on turns
- post-wheel alignment testing procedures for heavy vehicles.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle wheel alignments that they have carried out, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer wheel alignment specifications
- three different heavy vehicles requiring wheel alignment
- wheel alignment equipment for heavy vehicles
- tools, equipment and materials appropriate for carrying out wheel alignment operations on heavy vehicles.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTD106 Diagnose complex faults in heavy commercial vehicle steering and suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in heavy commercial vehicle steering and suspension systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those who work in the automotive service and repair industry. The steering and suspension systems include those of heavy commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Steering and Suspension

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the job requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery
Reading	• Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking steering and suspension system specifications and procedures

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures steering and suspension system components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring equipment • Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTD006 Diagnose complex faults in heavy commercial vehicle steering and suspension systems.

Links

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Assessment Requirements for AURHTD106 Diagnose complex faults in heavy commercial vehicle steering and suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in each of the following:
  - steering system of a heavy commercial vehicle
  - suspension system of a different heavy commercial vehicle
  - steering or suspension system of a third heavy commercial vehicle.
- develop a testing strategy in the course of the above work to diagnose the cause of two of the following types of complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in heavy commercial vehicle steering and suspension systems, including:
  - heavy commercial vehicle steering and suspension system manufacturer specifications
- workplace procedures required to diagnose complex faults in heavy commercial vehicle steering and suspension systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in heavy commercial vehicle steering and suspension systems, including procedures for working with:
    - stored energy in springs, air springs and torsion bars
    - high pressure and high temperature steering system fluids
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from steering and suspension systems
- types of complex faults relating to heavy commercial vehicle steering and suspension systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- key features of heavy commercial vehicle steering and suspension systems, including:
    - manual steering systems
    - power assisted steering systems, including:
        - power steering pumps
        - power steering boxes
        - rack and pinion steering
    - electronic and load sensing steering systems
    - leaf spring suspension
    - equaliser beam-leaf spring and solid rubber spring suspension
    - rubber block and torsion bar suspension
    - air spring suspension, including:
        - pneumatic
        - combination pneumatic and leaf spring
    - axle alignment
- testing procedures for heavy commercial vehicle steering and suspension systems, including procedures for:
    - vehicle dynamic and static testing, including hydraulic tests of power assisted steering systems
    - component analysis
    - abnormal noise analysis
    - component failure analysis
- key features and limitations of diagnostic testing equipment required to diagnose complex faults in heavy commercial vehicle steering and suspension systems
- procedures for accessing and interpreting scan tool system data, including:

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- diagnostic trouble codes (DTCs), including:
  - conditions that set the DTCs
  - conditions for running DTCs
- live data
- waveforms
- vehicle continuous and non-continuous monitored systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy commercial vehicle steering and suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer heavy commercial vehicle steering and suspension specifications
- three different heavy commercial vehicles with complex faults in their steering and suspension systems
- heavy commercial vehicle steering and suspension system diagnostic equipment, including:
  - pressure gauge
  - scan tool
- heavy commercial vehicle steering and suspension system specifications
- tools, equipment and materials appropriate for diagnosing complex faults in heavy commercial vehicle steering and suspension systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTE102 Diagnose and repair heavy vehicle compression ignition engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the compression ignition engines of heavy vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The compression ignition engines include those in agricultural machinery, heavy commercial vehicles, mobile plant machinery or marine vessels.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Engines

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair engine	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and

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ELEMENT	PERFORMANCE CRITERIA
	implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose engine	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair engine	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures engine components • Uses mathematical operations • Calculates distances, areas, volumes and tolerances • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTE002 Diagnose and repair heavy vehicle compression ignition engines.

Links

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Assessment Requirements for AURHTE102 Diagnose and repair heavy vehicle compression ignition engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two heavy vehicle compression ignition engines.

In the course of the above work, the candidate must:

- diagnose and repair a fault in:
  - an engine cylinder head, which must include removing the cylinder head from the engine
  - an engine bottom end, which must include removing the crankshaft, pistons and connecting rods from the engine
- dismantle and reassemble one of the above compression ignition engines, ensuring that the engine is running at the end of the repair.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy vehicle compression ignition engines, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy vehicle compression ignition engines, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy vehicle compression ignition engines, including procedures for:
    - isolating and stabilising heavy vehicles or machines
    - lifting and supporting heavy vehicle compression ignition engines
    - working with compression ignition engines
- environmental requirements relating to diagnosing and repairing heavy vehicle compression ignition engines, including procedures for trapping, storing and disposing of fluids released from compression ignition engines
- operating principles of heavy vehicle compression ignition engines, including:
    - combustion, including:
        - combustion cycles
        - swept volume and engine volume
        - compression ratio
        - engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
        - torque and horsepower, including brake horsepower
- purpose and operation of heavy vehicle compression ignition engines and components, including:
    - lubrication system, cylinder blocks, cylinder liners, pistons, cylinder heads, combustion chambers, inlet and exhaust manifolds, connecting rods, crankshafts, pistons, piston rings, gudgeon pins, camshafts, timing gears, vibration dampers and flywheels
- diagnostic testing procedures for heavy vehicle compression ignition engines, including:
    - scan tool testing
    - engine compression tests
    - cylinder leakage tests
    - oil pressure tests
    - checking sources of fluid leaks
    - exhaust smoke diagnosis
    - checking abnormal engine noises
- dismantling, inspection and reassembly procedures for heavy vehicle compression ignition engines, including procedures for:
    - measuring clearances and tolerances, including:
        - crankshaft and camshaft bearings and journals
        - main bearing and connecting rod tunnels
        - cylinder bores and pistons
        - liner depths and protrusions

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    - cylinder heads
  - inspecting components
- repair procedures for heavy vehicle compression ignition engines, including procedures for removing and refitting the:
  - cylinder head
  - piston and connecting rod
  - crankshaft
  - cylinder liner
- post-repair testing procedures for heavy vehicle compression ignition engines.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle compression ignition engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- two different heavy vehicle compression ignition engines with faults
- diagnostic equipment for heavy vehicle compression ignition engines
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle compression ignition engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTE103 Diagnose complex faults in heavy vehicle diesel engines

Modification History

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Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in heavy vehicle diesel engines and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those who work in the automotive service and repair industry. The diesel engines include those of agricultural machinery, heavy commercial vehicles, marine vessels or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Engines

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control

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ELEMENT	PERFORMANCE CRITERIA
	measures in line with workplace policies and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery
Reading	• Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking engine management system specifications and procedures
Oral communication	• Clarifies instructions

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SKILL	DESCRIPTION
	• Obtains information from customers and supervisors
Numeracy	• Measures engine components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interpret units, such as amperes, ohms, and volts
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring equipment • Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTE003 Diagnose complex faults in heavy vehicle diesel engines.

Links

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Assessment Requirements for AURHTE103 Diagnose complex faults in heavy vehicle diesel engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in three different heavy vehicle diesel engines in which the work for at least two of the engines must involve a different type of complex fault selected from the following:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.
- develop a testing strategy to diagnose cause of the complex faults in the above engines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in heavy vehicle diesel engines, including heavy vehicle diesel engine manufacturer specifications
- workplace procedures required to diagnose complex faults in heavy vehicle diesel engines, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing complex faults in heavy vehicle diesel engines, including procedures for working with:
  - hot engine components
  - rotating engine components
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from diesel engines
- types of complex faults relating to heavy vehicle diesel engines, including:
  - intermittent
  - multi-system
  - introduced as a result of system repair
  - indirect, caused by the influence of external systems
- key features of heavy vehicle diesel engines, including:
  - intake, exhaust, lubrication, cooling and engine mounting systems and components
  - turbochargers
  - valve timing
- testing procedures for heavy vehicle diesel engines, including:
  - abnormal noise analysis
  - compression testing
  - cylinder leak-down testing
  - oil pressure testing
  - component failure analysis
- key features and limitations of diagnostic testing equipment required to diagnose complex faults in heavy vehicle diesel engines
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
  - vehicle continuous and non-continuous monitored systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle diesel engines that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer heavy vehicle diesel engine specifications
- three different heavy vehicle diesel engines with complex faults
- heavy vehicle diesel engine diagnostic equipment, including:
  - compression tester
  - cylinder leakage tester
  - oil pressure gauge
  - scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in heavy vehicle diesel engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTF102 Diagnose and repair heavy vehicle diesel fuel injection systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the diesel fuel injection systems of heavy vehicles and machinery. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The diesel fuel injection systems include those in agricultural machinery, heavy commercial vehicles, mobile plant machinery or marine vessels. The unit does not apply to electronic compression ignition engine management systems.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Fuel Systems

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair fuel injection system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with

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ELEMENT	PERFORMANCE CRITERIA
	diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose fuel injection system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair fuel injection system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures fuel injection system components • Uses mathematical operations • Calculates areas, volumes and tolerances • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses diagnostic equipment • Uses precision measuring equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTF002 Diagnose and repair heavy vehicle diesel fuel injection systems.

Links

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Assessment Requirements for AURHTF102 Diagnose and repair heavy vehicle diesel fuel injection systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two different heavy vehicle diesel fuel injection systems, completing the following with each system:
  - testing the low-pressure fuel supply
  - removing and refitting a low-pressure fuel pump
  - removing, refitting and timing a diesel high pressure pump
  - removing, refitting and testing injectors
  - bleeding a diesel fuel injection system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy vehicle diesel fuel injection systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy vehicle diesel fuel injection systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy vehicle diesel fuel injection systems, including procedures for:
    - working with:
        - high fuel pressures
        - stored fuel pressures
        - high voltage diesel fuel injectors
    - engine start-up and shut-down
- environmental requirements relating to diagnosing and repairing heavy vehicle diesel fuel injection systems, including procedures for trapping, storing and disposing of diesel fuel released from injection systems
- operating principles of heavy vehicle diesel fuel injection systems, including:
    - phases of combustion
    - composition of diesel fuel
- purpose and operation of heavy vehicle diesel fuel injection systems and components, including:
    - low pressure fuel supply systems, including:
        - fuel pumps
        - filters and separators
    - common rail injection systems
    - high pressure diesel fuel injection systems, including:
        - distributor type injection pumps
        - in-line injection pumps
        - electronic unit injection (EUI)
        - hydraulic electronic unit injection (HEUI)
        - high pressure injection (HPI)
        - injectors
- diagnostic testing procedures for heavy vehicle diesel fuel injection systems, including:
    - assessing exhaust smoke
    - testing low pressure fuel systems
    - testing injector opening pressure, back leakage, nozzle leakage and spray pattern
    - assessing air induction systems
    - measuring individual cylinder exhaust temperature to determine underperforming cylinders
- repair procedures for heavy vehicle diesel fuel injection systems, including procedures for:
    - dismantling, cleaning, adjusting and reassembling conventional injectors
    - removing, installing and timing high pressure injection pumps
    - adjusting and tuning mechanical unit injection systems
    - bleeding fuel systems

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- post-repair testing procedures for heavy vehicle diesel fuel injection systems, including procedures for:
  - checking fuel system leakage
  - assessing engine performance.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle diesel fuel injection systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer heavy vehicle diesel fuel injection system specifications
- two different heavy vehicles with faults in their diesel fuel injection systems
- diagnostic equipment for diesel fuel injection systems
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle diesel fuel injection systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTJ102 Select heavy vehicle tyres, wheels and rims

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to select heavy vehicle tyres, wheels and rims to suit specific applications. It involves identifying and confirming work requirements, preparing for the work, selecting tyres, wheels and rims and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The tyres, wheels and rims include those of agricultural machinery, forklifts, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Wheels and Tyres

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify tyre and wheel options	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret tyre and wheel information in order to identify tyre and wheel options required for the job 1.3 Identify hazards and issues associated with the work, assess potential risks and implement control measures from workplace health and safety requirements
2. Select tyres and wheels for specific applications	2.1 Assess technical compliance and economic benefits of tyre, wheel and rim options 2.2 Select tyres, wheels, and rims according to manufacturer

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ELEMENT	PERFORMANCE CRITERIA
	specifications, workplace procedures, Australian Design Rules, and customer requirements
3. Complete work processes	3.1 Communicate selection to appropriate personnel or customer according to workplace procedures 3.2 Complete and process workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets information from manufacturer specifications and workshop literature when seeking tyre, wheel and rim specifications
Numeracy	• Interprets numerical information when selecting tyres, wheels and rims • Understands both metric and imperial units of measurement

Unit Mapping Information

Supersedes and is equivalent to AURHTJ002 Select heavy vehicle tyres, wheels and rims for specific applications.

Links

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Assessment Requirements for AURHTJ102 Select heavy vehicle tyres, wheels and rims

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- select the tyres, wheels and rims for four different heavy vehicles to suit specific customer requirements, which must involve accessing and interpreting information in manufacturer specifications relating to the selection.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and apply manufacturer specifications for the following heavy vehicle wheels and tyres:
  - tubeless and tubed tyres
  - bias ply and radial ply tyres
  - demountable rims
  - disc wheels
  - tyre tread designs
- methods to locate and apply Australian Design Rules relating to heavy vehicle tyres and wheels
- procedures to communicate with customers the selection of tyres and wheels
- workplace procedures relating to the selection of heavy vehicle tyres, wheels and rims, including:
  - documentation for heavy vehicle wheels and tyres
  - workplace housekeeping procedures
  - documentation procedures
- workplace health and safety requirements relating to heavy vehicle wheels and tyres
- heavy vehicle tyre, wheel and rim technical information, including:
  - heavy vehicle tyre fitment guide

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- Tyre and Rim Association of Australia Standards Manual
- heavy vehicle tyre and wheel assembly terminology and codes
- heavy vehicle tread patterns, and tyre and wheel assembly types
- specific tyre applications for varying terrain, soil and weather conditions.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle tyres, wheels and rims that they have selected, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- vehicle manufacturer tyre, wheel and rim specifications and tyre, wheel and rim fitment guide
- Australian Design Rules relating to heavy vehicle tyres, wheels and rims
- four different heavy vehicles for the selection of tyres, wheels and rims
- equipment and material appropriate for selecting heavy vehicle tyres, wheels and rims for specific applications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTJ103 Remove, inspect and refit heavy vehicle wheel and tyre assemblies

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove, inspect and refit the wheel and tyre assemblies of heavy vehicles. It involves identifying and confirming job requirements; preparing for the task; removing, inspecting and refitting the wheel and tyre assembly; and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The wheel and tyre assemblies include those of agricultural machinery, forklifts, heavy commercial vehicles or mobile plant machinery. This unit does not apply to off-the-road tyres of mobile plant machinery, motorcycle or light vehicle wheel assemblies.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Wheels and Tyres

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove wheel and tyre assembly	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for wheel and tyre removal, inspection and re-fitting activity 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment and materials required for the job

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ELEMENT	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Remove and inspect wheel and tyre assembly	2.1 Remove wheel and tyre assembly according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 2.2 Inspect wheel and tyre assembly, mounting points and fittings according to manufacturer specifications and workplace procedures 2.3 Report inspection findings and make recommendations for necessary repairs according to workplace procedures
3. Refit wheel and tyre assembly	3.1 Identify required information for refitting activity 3.2 Re-fit and adjust wheel and tyre assembly according to manufacturer specifications, workplace procedures and workplace health and safety requirements 3.3 Complete tightening sequence and torque settings according to manufacturer specifications and workplace procedures 3.4 Check wheel assembly for correct assembly and run-out according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets information from manufacturer and workshop literature when seeking wheel and tyre specifications, including tightening procedures

Numeracy	• Interprets numerical information in:
	  • manufacturer specifications, including wheel nut tension settings
	  • demountable rim assembly documentation

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SKILL	DESCRIPTION
	• tyres • disc wheels • tyre inflation gauges • Understands numerical divisions in metric and imperial units of measurement
Technology	• Operates specialised tools and equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTJ003 Remove, inspect, and refit heavy vehicle wheel assemblies.

Links

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Assessment Requirements for AURHTJ103 Remove, inspect and refit heavy vehicle wheel and tyre assemblies

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove, inspect, refit and adjust the wheel and tyre assemblies on the steer and drive axle dual wheels of a heavy vehicle
- remove, inspect, refit and adjust the demountable rim and tyre assemblies on the steer and drive axle dual wheels of a second heavy vehicle.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove, inspect and re-fit heavy vehicle wheel and tyre assemblies, including:
  - manufacturer specifications and procedures
- workplace procedures required to remove, inspect and re-fit heavy vehicle wheel and tyre assemblies, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to heavy vehicle wheel and tyre assemblies, including procedures for:
  - working with wheel and tyre assemblies and air inflation pressures
  - working with multi-piece split wheels, split and multi-piece wheels and rims

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    - manually handling wheel and tyre assemblies
    - lifting and supporting heavy vehicles
- types and applications of wheel assemblies, including:
    - cast spoke wheels
    - disc wheels, including:
        - stud piloted wheels
        - hub piloted wheels
        - studs and nuts for disc wheels
        - multi-piece split wheels
    - demountable rims, including:
        - single piece tyre-to-rim assemblies
        - multi-piece tyre-to-rim assemblies
        - spacer band
        - rim clamps, studs and nuts for demountable rims
- procedures for removing, inspecting and refitting heavy vehicle wheel and tyre assemblies, including wheel nut tensioning procedures
- post-fitting procedures and checks of heavy vehicle wheel and tyre assemblies, including:
    - correct operation of vehicle systems affected by the removal and refitting of wheel assemblies
    - wheel and tyre assembly run-out.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle wheel and tyre assemblies that they have worked on e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer wheel and tyre assembly specifications
- two different heavy vehicles and heavy vehicle wheel and tyre assemblies, including:
    - disc wheels and tyres
    - demountable rims, tyres and cast spoke wheels
- tools, equipment and materials appropriate for removing, inspecting and refitting heavy vehicle wheel and tyre assemblies.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURHTJ104 Remove, inspect, repair and refit agricultural equipment tyres and tubes

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove, inspect, repair and refit agricultural tyres and tubes from wheels. It involves identifying and confirming work requirements, preparing for the task, removing, inspecting, repairing and refitting the tyres and tubes, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The tyres and tubes include those of agricultural machinery equipment. This unit does not apply to heavy commercial vehicles, light vehicles, motorcycles, or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Wheels and Tyres

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove, inspect, repair and refit agricultural tyres and tubes	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for tyre and tube removal, inspection and repair activity 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment and materials required for the job and establish serviceability according to workplace

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ELEMENT	PERFORMANCE CRITERIA
	procedures
2. Remove and inspect tyres, tubes and wheels	2.1 Remove tyres and tubes from wheels according to manufacturer and workplace procedures, workplace health and safety and environmental requirements 2.2 Inspect tyres, tubes and wheels according to manufacturer specifications and workplace procedures 2.3 Report inspection findings and make recommendations for necessary repairs according to workplace procedures
3. Repair and refit tyres and tubes	3.1 Identify required information for repair activity 3.2 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.3 Mount tyre to wheel according to manufacturer and workplace procedures, without causing damage to components or systems 3.4 Check assembled wheel and tyre for correct assembly and serviceability according to manufacturer specifications and workplace procedures, and rectify any issues identified 3.5 Inflate tyre according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Reads and interprets information from manufacturer specifications, workplace procedures and documentation when seeking tyre and tube repair procedures and specifications
Numeracy	• Interprets numerical information when repairing tyres and tubes

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SKILL	DESCRIPTION
	• Understands both metric and imperial units of measurement
Technology	• Operates specialised tools and equipment • Operates specialised repair equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTJ004 Remove, inspect, repair and refit agricultural equipment tyres and tubes.

Links

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Assessment Requirements for AURHTJ104 Remove, inspect, repair and refit agricultural equipment tyres and tubes

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove, inspect, repair and refit agricultural tyres and tubes, including:
  - at least two tyres and tubes fitted to split or multi-piece wheels
  - at least two tyres and tubes fitted to drop centre wheels.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove, inspect, repair and re-fit agricultural tyres and tubes, including:
  - manufacturer specifications and procedures
- workplace procedures required to remove, inspect, repair and re-fit agricultural tyres and tubes, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety requirements relating to agricultural tyres and tubes, including procedures for:
  - deflating and inflating tyres on agricultural equipment
  - raising and supporting machinery on unstable surfaces

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    - manual handling when lifting wheel assemblies
    - removing, repairing and refitting tyres and tubes
- environmental requirements relating to agricultural tyres and tubes, including:
    - procedures for trapping and disposing of tyre material produced during repair
- procedures for removing, inspecting, repairing and refitting tyres and tubes, including:
    - rim or hub mounted multi-piece rims
    - one piece wheels
- types and uses of tyres, tubes, wheels and rims, including:
    - radial and bias ply tyres
    - tubed and tubeless tyres
    - rim or hub mounted multi-piece wheels
    - one piece wheels
- types and operation of tyre changing equipment and tyre and tube repair equipment
- post-fitting procedures and checks of agricultural tyres and tubes.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the agricultural tyres and tubes that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer tyre and tube repair procedures and specifications
- agricultural tyres and tubes specified in the performance evidence
- tools, equipment and materials appropriate for removing, inspecting, repairing and fitting agricultural tyres and tubes, including:
    - tyre and tube repair tools and equipment
    - tyre and tube repair consumables
    - tyre changing tools and equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURHTJ106 Remove, inspect, repair and refit heavy vehicle tyres and tubes

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove, inspect, repair and refit heavy vehicle tyres and tubes from wheels. It involves identifying and confirming work requirements, preparing for the task, removing, inspecting, repairing and refitting the tyres and tubes, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The tyres and tubes include those of forklifts, heavy commercial vehicles or mobile plant machinery. This unit does not apply to off-the-road (OTR) tyres of mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Wheels and Tyres

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove, inspect, repair and refit heavy vehicle tyres and tubes	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for tyre and tube removal, inspection and repair activity 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment and materials required for the job and establish serviceability according to workplace

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ELEMENT	PERFORMANCE CRITERIA
	procedures
2. Remove and inspect tyres, tubes and wheels	2.1 Remove tyres and tubes from wheels according to manufacturer and workplace procedures, workplace health and safety and environmental requirements 2.2 Inspect tyres, tubes and wheels according to manufacturer specifications and workplace procedures 2.3 Report inspection findings and make recommendations for necessary repairs according to workplace procedures
3. Repair and refit tyres and tubes	3.1 Identify required information for repair activity 3.2 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.3 Mount tyre to wheel according to manufacturer and workplace procedures, without causing damage to components or systems 3.4 Check assembled wheel and tyre for correct assembly and serviceability according to manufacturer specifications and workplace procedures, and rectify any issues identified 3.5 Inflate tyre according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets information in manufacturer specifications and workshop literature when seeking tyre and tube repair procedures and specifications
Oral communication	• Clarifies instructions

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SKILL	DESCRIPTION
Numeracy	• Interprets numerical information when repairing tyres and tubes • Understands both metric and imperial units of measurement
Technology	• Operates specialised tools and equipment • Operates specialised repair equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTJ006 Remove, inspect, repair and refit heavy vehicle tyres and tubes.

Links

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Assessment Requirements for AURHTJ106 Remove, inspect, repair and refit heavy vehicle tyres and tubes

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove, inspect, repair and refit heavy vehicle tyres to both split lock ring and one piece wheels, including repairs or replacements to:
  - at least two tubes
  - at least two radial ply tyres.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove, inspect, repair and re-fit heavy vehicle tyres and tubes, including:
  - manufacturer specifications and procedures
- workplace procedures required to remove, inspect, repair and re-fit heavy vehicle tyres and tubes, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to heavy vehicle tyres and tubes, including procedures for:
  - deflating and inflating tyres

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    - manual handling when lifting wheel assembly
    - removing, repairing and refitting tyres and tubes
- environmental requirements relating to heavy vehicle tyres and tubes, including procedures for:
    - trapping and disposing of tyre material produced during repair procedures
- procedures for removing, inspecting, repairing and refitting tyres and tubes, including:
    - split lock rings
    - rim or hub mounted multi-piece rims
    - one piece wheels
    - two piece split wheels
- types and uses of tyres, tubes, wheels and rims, including:
    - radial and bias ply tyres
    - tubed and tubeless tyres
    - rim or hub mounted multi-piece wheels
    - one piece wheels
    - two piece split wheels
- types and operation of tyre changing equipment and tyre and tube repair equipment
- post-fitting procedures and checks of heavy vehicle tyres and tubes.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle tyres and tubes that they have worked on e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer tyre and tube repair procedures and specifications
- heavy vehicle tyres, tubes, wheel and rim assemblies specified in the performance evidence
- tools, equipment and materials appropriate for removing, inspecting, repairing and refitting heavy vehicle tyres and tubes, including:
    - tyre and tube repair tools and equipment
    - tyre and tube repair consumables
    - tyre changing tools and equipment.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTL101 Inspect, diagnose and repair alternative fuel systems in heavy vehicle engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect, diagnose and repair alternative fuel systems in heavy vehicle engines. The unit involves preparing for the task, inspecting the system, developing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work on the alternative fuel systems of agricultural machinery, heavy commercial vehicles, marine vessels or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Mechanical – Heavy Vehicle Technical – Alternative Fuels

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect alternative fuel system	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret servicing information 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for servicing activity and establish serviceability according to workplace procedures

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ELEMENT	PERFORMANCE CRITERIA
2. Inspect fuel system	2.1 Carry out inspection according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 2.2 Compare inspection results with manufacturer specifications 2.3 Report inspection findings according to workplace procedures
3. Prepare to diagnose and repair fuel system	3.1 Identify required information for diagnosis activity 3.2 Analyse diagnostic options and develop testing strategy to identify cause of fault using workplace and manufacturer procedures 3.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 3.4 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
4. Diagnose fuel system	4.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 4.2 Identify cause of fault through analysis of diagnostic test results. 4.3 Confirm and report cause of fault according to workplace procedures 4.4 Develop and report recommendations for necessary repairs according to workplace procedures
5. Repair fuel system	5.1 Identify required information for repair activity 5.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 5.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 5.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
6. Complete work processes	6.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 6.2 Clear work area and dispose of or recycle materials according to workplace procedures 6.3 Complete documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures alternative fuel system components • Uses mathematical operations, including addition, subtraction and multiplication • Calculates distances, areas, volumes and tolerances • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring equipment and diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTL001 Inspect, diagnose and repair alternative fuel systems for heavy vehicle engines.

Links

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Assessment Requirements for AURHTL101 Inspect, diagnose and repair alternative fuel systems in heavy vehicle engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect, diagnose and repair alternative fuel systems in two different heavy vehicle engines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair alternative fuel systems in heavy vehicle engines, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair alternative fuel systems in heavy vehicle engines, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to inspecting, diagnosing and repairing alternative fuel systems, including procedures for:
  - working with alternative fuel systems
  - selecting and using personal protective equipment (PPE)

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- environmental requirements relating to inspecting, diagnosing and repairing alternative fuel systems, including procedures for preventing fuel leakage from fuel systems
- operating principles of alternative fuel systems
- application and function of alternative fuel systems
- inspect and repair procedures for alternative fuel systems
- diagnostic testing procedures for alternative fuel systems
- post-repair testing procedures for alternative fuel systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the alternative fuel systems that they have inspected and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer alternative fuel system specifications
- two different heavy vehicle engines with alternative fuel systems requiring repair
- diagnostic equipment for alternative fuel systems, including exhaust gas analyser
- repair tools, equipment and materials for alternative fuel systems in heavy vehicle engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTQ102 Diagnose and repair heavy commercial vehicle final drive assemblies

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the final drive assemblies of heavy commercial vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The final drive assemblies include those in heavy commercial vehicles. This unit does not apply to agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Driveline and Final Drives

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair heavy commercial vehicle final drive assembly	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and

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ELEMENT	PERFORMANCE CRITERIA
	implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy commercial vehicle final drive assembly	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair heavy commercial vehicle final drive assembly	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures final drive assembly components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Calculates gear ratios and torque reduction
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTQ002 Diagnose and repair heavy commercial vehicle final drive assemblies.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTQ102 Diagnose and repair heavy commercial vehicle final drive assemblies

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least one heavy commercial vehicle final drive assembly and in the course of doing so:
  - undertake a complete dismantle and reassembly of a crown wheel and pinion final drive assembly
  - remove, refit or replace one final drive assembly
  - remove, refit or replace one rear axle wheel bearing assembly.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy commercial vehicle final drive assemblies, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy commercial vehicle final drive assembles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy commercial vehicle final drive assemblies, including procedures for:
  - isolating and stabilising vehicles
  - lifting and supporting final drive assemblies
- environmental requirements relating to diagnosing and repairing heavy commercial vehicle final drive assemblies, including procedures for trapping, storing and disposing of oils released from final drive assemblies
- operating principles of heavy commercial vehicle final drive assemblies and associated components, including:
  - final drive gears, including:
    - gear types
    - gear ratios and torque reduction and multiplication
  - differential function
- purpose and operation of heavy commercial vehicle final drive assemblies and components, including:
  - single reduction
  - two-speed reduction
  - double reduction
  - tandem drive
  - power divider
  - differentials, including limited slip differentials
  - axle shafts and bearings
- diagnostic testing procedures for heavy commercial vehicle final drive assemblies, including procedures for:
  - road testing procedures, including:
    - final drive assembly noise diagnostic
    - final drive assembly operation
  - pre-dismantling inspection procedures
- repair procedures for heavy commercial vehicle final drive assemblies, including procedures for:
  - dismantling final drive assemblies
  - inspecting final drive assemblies
  - reassembling and adjusting the following components:
    - pinion depth
    - pinion bearing preload
    - crown wheel and pinion backlash
    - side bearing preload
    - crown wheel and pinion tooth contact
- post-repair testing procedures for heavy commercial vehicle final drive assemblies.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy commercial vehicle final drive assemblies that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer final drive assembly specifications
- heavy commercial vehicle crown wheel and pinion final drive assembly with faults
- diagnostic equipment for heavy commercial vehicle final drive assemblies
- tools, equipment and materials appropriate for repairing and adjusting heavy commercial vehicle final drive assemblies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTQ103 Diagnose and repair heavy vehicle drive shafts

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the drive shafts of heavy vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The drive shafts include those in heavy vehicles. This unit does not apply to agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Driveline and Final Drives

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair heavy vehicle drive shaft	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy vehicle drive shaft	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair heavy vehicle drive shaft	3.1 Identify required information for repair activity 3.2 Identify required tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures drive shaft components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Understands angles in degrees
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTQ003 Diagnose and repair heavy vehicle drive shafts.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTQ103 Diagnose and repair heavy vehicle drive shafts

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least one heavy vehicle drive shaft, including:
  - replacing one universal joint
  - completing at least two of the following further actions:
    - replacing centre support bearing assembly
    - measuring drive shaft angles and phasing
    - measuring run-out of drive shaft
    - balancing drive shaft
    - replacing slip spline.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy vehicle drive shafts, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy vehicle drive shafts, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy vehicle drive shafts, including procedures for:
    - isolating and stabilising vehicles or machines
    - working with rotating shafts
- environmental requirements relating to diagnosing and repairing heavy vehicle drive shafts
- operating principles of heavy vehicle drive shafts and associated components, including:
    - universal joint working angles
    - drive shaft phasing angles
    - velocity fluctuation of universal joints
- purpose and operation of heavy vehicle drive shafts and components, including:
    - single and multi-piece shafts
    - universal joints
    - centre support assembly
    - slip joints
    - shaft alignment
- diagnostic testing procedures for heavy vehicle drive shafts, including road testing procedures for:
    - drive shaft noise diagnostic
    - vibration diagnostic
    - drive line geometry and phasing
    - drive shaft run-out
- repair procedures for heavy vehicle drive shafts, including procedures for:
    - dismantling drive shafts
    - inspecting drive shafts
    - reassembling drive shaft and aligning components
- post-repair testing procedures for heavy vehicle drive shafts.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle drive shafts that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer drive shaft specifications
- heavy vehicle with faults in its drive shaft
- diagnostic equipment for heavy vehicle drive shafts
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle drive shafts.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTR105 Diagnose and repair heavy commercial trailer electronically controlled roll stability systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the electronically controlled stability systems of heavy commercial trailers over 4.5 tonnes. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The electronically controlled roll, stability systems are fitted to heavy commercial trailers.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair heavy commercial trailer roll stability system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy commercial trailer roll stability system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair heavy commercial trailer roll stability system	3.1 Identify required information for repair activity 3.2 Identify required tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm commercial trailer is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures roll stability system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Operates diagnostic and test equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTR005 Diagnose and repair heavy commercial trailer electronically controlled roll stability systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTR105 Diagnose and repair heavy commercial trailer electronically controlled roll stability systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the electronically controlled, roll stability systems of at least two different heavy commercial trailers.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy commercial trailer electronically controlled roll stability systems including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy commercial trailer electronically controlled roll stability systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy commercial trailer electronically controlled roll stability systems, including procedures for using specialised tools and equipment

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- environmental requirements relating to diagnosing and repairing heavy commercial trailer electronically controlled roll stability systems
- purpose and operation of heavy commercial trailer electronically controlled roll stability systems and components, including:
  - roll stability control module
  - wheel speed sensor
  - yawl sensor
  - load sensor
  - electrical wiring and connector
- diagnostic testing procedures for heavy commercial trailer electronically controlled, roll stability systems, including:
  - accessing and interpreting diagnostic trouble codes
  - analysing system operation using electrical test equipment, scan tools and another industry-relevant test equipment
  - visual, aural and functional assessments, including component damage and wear
- repair procedures for heavy commercial trailer electronically controlled roll stability systems, including procedures for:
  - roll stability control module
  - wheel speed sensor
  - yawl sensor
  - load sensor
  - electrical wiring and connector
- post-repair testing procedures for heavy commercial trailer electronically controlled roll stability systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the trailer electronically controlled roll stability systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer heavy trailer roll stability specifications
- two different heavy commercial trailers with faults in their electronically controlled roll stability systems

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- diagnostic equipment for heavy trailer electronically controlled roll stability systems
- tools, equipment and materials appropriate for repairing and adjusting heavy trailer electronically controlled roll stability systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTX101 Diagnose and repair heavy vehicle manual transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the manual transmissions of heavy vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The manual transmissions include those in agricultural machinery, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Transmissions

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair heavy vehicle manual transmission	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy vehicle manual transmission	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair heavy vehicle manual transmission	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures manual transmission components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Calculates gear ratios • Calculates torque reduction and multiplication
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTX001 Diagnose and repair heavy vehicle manual transmissions.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTX101 Diagnose and repair heavy vehicle manual transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- disassemble and reassemble one heavy vehicle manual transmission that has a minimum of nine speeds
- diagnose and repair a fault in at least three of the following components of a heavy vehicle manual transmission:
  - input shaft
  - gear shift mechanisms
  - gears and shafts
  - transmission bearings
  - auxiliary section and controls
  - gasket and seal leaks
- remove, refit or replace a heavy vehicle manual transmission.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy vehicle manual transmissions, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy vehicle manual transmissions, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy vehicle manual transmissions, including procedures for:
    - using transmission lifting and supporting equipment
    - manual handling heavy vehicle manual transmissions
- environmental requirements relating to diagnosing and repairing heavy vehicle manual transmissions, including procedures for trapping, storing and disposing of clutch dust, clutch fluid and oils released from manual transmissions
- operating principles of heavy vehicle manual transmissions and associated components, including:
    - power flows, including:
        - longitudinal manual transmissions
        - transfer cases
    - synchromesh operation
    - gearshift mechanisms, including:
        - mechanical
        - air
        - electrical/pneumatic
        - electronically automated manual transmissions
    - transfer cases
    - power take-off
- diagnostic testing procedures for heavy vehicle manual transmissions, including:
    - abnormal noise diagnosis
    - electronic diagnosis
    - shift diagnosis
- dismantling procedures for heavy vehicle manual transmissions, including:
    - measuring clearances and tolerances
    - inspecting components
- repair procedures for heavy vehicle manual transmissions, including:
    - gears, shafts and bearings
    - electronic control systems
    - gear shift mechanism
    - post-repair testing procedures for heavy vehicle manual transmissions.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the trailer electronically controlled roll stability systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer manual transmission specifications
- one heavy vehicle with faults in its manual transmission that has a minimum of 9 speeds
- diagnostic equipment for heavy vehicle manual transmissions
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle manual transmissions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTX103 Diagnose and repair heavy vehicle automatic transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the automatic transmissions of heavy vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The automatic transmissions include those in agricultural machinery, heavy commercial vehicles or mobile plant machinery. The unit does not apply to electronically controlled drive management systems or power shift transmissions.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Transmissions

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair heavy vehicle automatic transmission	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and

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ELEMENT	PERFORMANCE CRITERIA
	implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy vehicle automatic transmission	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair heavy vehicle automatic transmission	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures automatic transmission components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Calculates gear ratios • Calculates torque reduction and multiplication
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring equipment • Uses diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTX003 Diagnose and repair heavy vehicle automatic transmissions.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTX103 Diagnose and repair heavy vehicle automatic transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- disassemble and reassemble one heavy vehicle automatic transmission
- diagnose and repair a fault in two of the following components of a heavy vehicle automatic transmission:
  - torque converter
  - transmission oil pump
  - front pump seal
  - valve body
  - shift or pressure solenoid
  - clutch pack
  - one-way clutch
  - planetary gear set
  - internal bearings or thrust washers
  - gasket and seal leaks
  - sensors
  - heat exchanger
- remove, refit or replace a heavy vehicle automatic transmission.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy vehicle automatic transmissions, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation

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- workplace procedures required to diagnose and repair heavy vehicle automatic transmissions, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy vehicle automatic transmissions, including procedures for:
  - using transmission lifting and supporting equipment
  - isolating and stabilising vehicles
- environmental requirements relating to diagnosing and repairing heavy vehicle automatic transmissions, including procedures for trapping, storing and disposing of oils and fluids released from automatic transmissions
- operating principles of heavy vehicle automatic transmissions and associated components, including:
  - fluid couplings
  - mechanical systems, including:
    - gear types
    - gear ratios and torque
    - simple and compound planetary gear trains
    - gear range and transfer case power flows
  - hydraulic systems
  - electronic systems, including:
    - electronic control unit (ECU)
    - electronic sensors
    - solenoids
- purpose and operation of heavy vehicle automatic transmissions and components, including:
  - torque converters, including:
    - impeller, stator, one-way clutch and turbine operation
    - lock-up torque converters
  - automatic transmission mechanical components, including:
    - clutch packs, one-way clutches, simple and compound planetary gear sets, and transfer case
  - power flows, including:
    - longitudinal automatic transmissions
    - transfer case

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    - power take-off
  - automatic transmission hydraulic components and hydraulic control components, including:
    - oil pumps
    - valve body and hydraulic valves
    - heat exchanger
  - automatic transmission electronic components, including:
    - ECU input sensors
    - ECU outputs
- diagnostic testing procedures for heavy vehicle automatic transmissions, including:
  - stall tests
  - pressure test
  - using scan tools when testing
- repair procedures for heavy vehicle automatic transmissions, including for hydraulic, mechanical and electrical components
- dismantling procedures for heavy vehicle automatic transmissions, including:
  - measuring clearances and tolerances
  - inspecting components
- post-repair testing procedures for heavy vehicle automatic transmissions.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle automatic transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer automatic transmission specifications
- one heavy vehicle with faults in its automatic transmission
- diagnostic equipment for heavy vehicle automatic transmissions
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle automatic transmissions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURHTX104 Diagnose and repair heavy vehicle clutch systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the clutch systems of heavy vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The clutch systems include those in agricultural machinery, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Transmissions

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair heavy vehicle clutch system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy vehicle clutch system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair heavy vehicle clutch system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures clutch system components • Uses mathematical operations • Calculates distances, areas and tolerances • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTX004 Diagnose and repair heavy vehicle clutch systems.

Links

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Assessment Requirements for AURHTX104 Diagnose and repair heavy vehicle clutch systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair faults in the clutch system of a heavy vehicle, in which the work must involve:
  - removing and refitting a heavy vehicle manual transmission
  - removing, refitting or replacing the following components:
    - clutch friction disc
    - clutch pressure plate assembly
    - release bearing
- diagnose and repair a fault in one heavy vehicle clutch operating system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy vehicle clutch systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy vehicle clutch systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy vehicle clutch systems, including procedures for:
    - using lifting and supporting heavy vehicle manual transmission equipment
    - handling and controlling clutch dust and clutch fluid
- environmental requirements relating to diagnosing and repairing heavy vehicle clutch systems, including procedures for trapping, storing and disposing of clutch dust and fluids released from clutch systems
- purpose and operation of heavy vehicle clutch systems and components, including:
    - single-disc clutch assemblies
    - multi-disc clutch assemblies
    - coil spring clutches
    - diaphragm spring clutches
    - clutch brakes
    - flywheel
    - clutch operating systems, including:
        - mechanical
        - hydraulic
        - pneumatic
        - electronic
- diagnostic testing procedures for heavy vehicle clutch systems, including:
    - inspecting and evaluating clutch assembly components
    - inspecting and evaluating clutch operating system
    - testing stationary and mobile clutch performance
- repair procedures for heavy vehicle clutch systems, including procedures for:
    - clutch operating systems
    - removing and refitting clutch assembly
    - inspecting and evaluating clutch components
    - adjusting clutches
- post-repair testing procedures for heavy vehicle clutch systems, including testing stationary or mobile performance.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle clutch systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer clutch system specifications
- one heavy vehicle with clutch system faults
- diagnostic equipment for heavy vehicle clutch systems
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle clutch systems, including:
  - transmission lifting and supporting equipment
  - clutch aligning and adjusting tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTX106 Diagnose complex faults in heavy commercial vehicle transmission and driveline systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in heavy commercial vehicle transmission and driveline systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those who work in the automotive service and repair industry. The heavy commercial vehicle transmission and driveline systems include those of trucks or buses.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Transmissions

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery
Reading	• Interprets workplace instructions such as job cards • Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking transmission and driveline system specifications and procedures

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures transmission and driveline system components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment • Uses specialised testing equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTX006 Diagnose complex faults in heavy commercial vehicle transmission and driveline systems.

Links

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Assessment Requirements for AURHTX106 Diagnose complex faults in heavy commercial vehicle transmission and driveline systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in each of the following:
  - transmission system of a heavy commercial vehicle
  - driveline system of a different heavy commercial vehicle
  - transmission or driveline system of a third heavy commercial vehicle
- develop a testing strategy to diagnose the cause of at least two of the following complex faults in the course of the above work:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in heavy commercial vehicle transmission and driveline systems, including:
  - heavy commercial vehicle transmission and driveline system manufacturer specifications
- workplace procedures required to diagnose complex faults in heavy commercial vehicle transmission and driveline systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:

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    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in heavy commercial vehicle transmission and driveline systems, including procedures for lifting, supporting and manual handling heavy commercial vehicle transmission and driveline systems
- environmental requirements, including procedures for trapping, storing and disposing of hazardous materials and substances released from transmission and driveline systems
- types of complex faults relating to heavy commercial vehicle transmission and driveline systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- key features of heavy commercial vehicle transmission and driveline systems, including:
    - automatic transmissions
    - manual and automated manual transmissions
    - Hookes-type joints
    - drive shafts
    - final drives
- testing procedures for heavy commercial vehicle transmission and driveline systems, including procedures for:
    - vehicle dynamic and static testing
    - abnormal noise analysis
    - transmission oil pressure tests
    - sources of fluid leaks
    - driveline angle measurement
- key features and limitations of diagnostic testing equipment required to diagnose complex faults in heavy commercial vehicle transmission and driveline systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - waveforms
    - vehicle continuous and non-continuous monitored systems.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy commercial vehicle transmission and driveline systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer heavy commercial vehicle transmission and driveline system specifications
- three different heavy commercial vehicles with complex faults in their transmission and driveline systems
- transmission and driveline diagnostic equipment, including:
  - oil pressure gauge
  - scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in heavy commercial vehicle transmission and driveline systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTY102 Diagnose and repair mechanical connections of heavy vehicles and trailers over 4.5 tonnes

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the mechanical connections fitted to both heavy vehicles and trailers. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The mechanical connections include those in agricultural machinery, heavy commercial vehicles, trailers over 4.5 tonnes or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Chassis and Frame

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair heavy vehicle mechanical connection	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and

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ELEMENT	PERFORMANCE CRITERIA
	implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy vehicle mechanical connection	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair heavy vehicle mechanical connection	3.1 Identify required information for repair activity 3.2 Identify required tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm commercial trailer is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures mechanical connection components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses test and diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTY002 Diagnose and repair mechanical connections of heavy vehicles and trailers over 4.5 tonnes.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTY102 Diagnose and repair mechanical connections of heavy vehicles and trailers over 4.5 tonnes

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two of the following mechanical connections of a heavy vehicle and trailer:
  - fifth wheel assembly
  - king pins and upper couplers
  - pintle hook and drawbar
  - landing gear
- diagnose and repair a fault in both of the following:
  - electrical connections of a heavy vehicle and trailer
  - pneumatic connection of a heavy vehicle and trailer.

In the course of the above work, the candidate must:

- check for slack in the fifth wheel operation when connected to a trailer
- inspect top plate and brackets for cracks
- inspect the fifth wheel and mounting plate welds
- check fifth wheel operation using a lock tester.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair mechanical connections of heavy vehicles and trailers over 4.5 tonnes, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation

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- workplace procedures required to diagnose and repair mechanical connections of heavy vehicles and trailers over 4.5 tonnes, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing mechanical connections of heavy vehicles and trailers over 4.5 tonnes, including procedures for:
  - lifting and supporting heavy vehicles and trailers
  - safely manoeuvring heavy vehicles and trailers
- environmental requirements relating to diagnosing and repairing mechanical connections of heavy vehicles and trailers over 4.5 tonnes, including procedures for safely handling and disposing of lubricants
- purpose and operation of mechanical connections of heavy vehicles and trailers over 4.5 tonnes, including:
  - fifth wheel assemblies
  - king pins and upper couplers
  - pintle hook and drawbar
  - landing gear
  - electrical connections
  - pneumatic connections
- types and applications of fifth wheel lubricants
- diagnostic testing procedures for mechanical connections of heavy vehicles and trailers over 4.5 tonnes, including:
  - checking for slack in the fifth wheel operation when connected to a trailer
  - inspecting top plate and brackets for cracks
  - inspecting the fifth wheel and mounting plate welds
  - checking fifth wheel operation using a lock tester
  - testing electrical connections
  - testing pneumatic connections
- repair and adjustment procedures for mechanical connections of heavy vehicles and trailers over 4.5 tonnes, including:
  - fifth wheel assembly
  - king pins and upper couplers
  - pintle hook and drawbar
  - landing gear

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  - electrical connections
  - pneumatic connections
- post-repair testing procedures for mechanical connections of heavy vehicles and trailers over 4.5 tonnes.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mechanical connections of heavy vehicles and trailers that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mechanical connection specifications
- two different heavy vehicle and trailer mechanical connections with faults
- lubricating equipment for mechanical connections of heavy vehicles and trailers
- tools, equipment and materials appropriate for repairing and adjusting mechanical connections of heavy vehicles and trailers.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURHTZ101 Diagnose and repair heavy vehicle emission control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the emission control systems of heavy vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The emission control systems include those in agricultural machinery, heavy commercial vehicles, marine vessels or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Heavy Vehicle Technical – Emission and Exhaust

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair heavy vehicle emission control system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy vehicle emission control system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair heavy vehicle emission control system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors

Numeracy	• Interprets numeric information, including:
	  • exhaust gas percentages
	  • exhaust gas ratios

Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised testing equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTZ001 Diagnose and repair heavy vehicle emission control systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTZ101 Diagnose and repair heavy vehicle emission control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least three of the following heavy vehicle emission control systems:
  - closed crankcase ventilation system
  - exhaust gas recirculation system
  - diesel engine particulate filter system
  - selective catalytic reduction system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy vehicle emission control systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy vehicle emission control systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy vehicle emission control systems, including procedures for working with vehicles that produce toxic emissions
- environmental requirements relating to diagnosing and repairing heavy vehicle emission control systems, including procedures for containing and disposing of emission control system fuels, fluids and components
- heavy vehicle emissions and their effects on the environment and health:
  - carbon monoxide
  - carbon dioxide
  - oxides of nitrogen
  - ozone
  - sulphur dioxide
  - particulate matter
  - hydrocarbons
- purpose and operation of heavy vehicle emission control systems and components, including:
  - closed crankcase ventilation system
  - exhaust gas recirculation system
  - diesel engine particulate filter system
  - selective catalytic reduction system
  - catalytic converter system
- diagnostic testing procedures for heavy vehicle emission control systems, including procedures for testing:
  - closed crankcase ventilation system operation
  - exhaust gas recirculation system operation
  - diesel engine particulate filter system operation
  - selective catalytic reduction system operation
  - catalytic converter system operation
  - exhaust gas analysis
  - exhaust smoke analysis
- repair procedures for heavy vehicle emission control systems, including procedures for removing, replacing and adjusting the system components
- post-repair testing procedures for heavy vehicle emission control systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle emission control systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer heavy vehicle emission control system specifications
- heavy vehicle engines with faults in the emission control systems specified in the performance evidence
- diagnostic equipment for testing heavy vehicle emission control systems
- tools, equipment and materials appropriate for repairing, replacing and adjusting heavy vehicle emission control systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTB101 Diagnose and repair motorcycle braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the braking systems of motorcycles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The braking systems include those in motorcycles or all-terrain vehicles (ATVs).

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical - Brakes

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair motorcycle braking system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose motorcycle braking system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair motorcycle braking system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions

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SKILL	DESCRIPTION
	• Obtains information from customers and supervisors.
Numeracy	• Measures braking system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses measuring diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURJTB001 Diagnose and repair motorcycle braking systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTB101 Diagnose and repair motorcycle braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the following two braking systems of at least two different motorcycles, each time repairing a different system from the following:
  - at least one hydraulically-operated two-wheel disc braking system, in which the work must involve:
    - removing, bleeding and adjusting hand brake lever and brake pedal, master cylinder, brake hose, brake callipers, brake pads and brake rotors
    - refitting or replacing them
  - at least one mechanically-operated drum braking system, in which the work must involve:
    - removing and adjusting hand brake lever and brake pedal, cables and rods, brake drums and shoes, and actuating mechanisms
    - refitting or replacing them.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair motorcycle braking systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair motorcycle braking systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:

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    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing motorcycle braking systems, including procedures for:
    - lifting and supporting motorcycles
    - handling and controlling brake dust and brake fluids
- environmental requirements relating to diagnosing and repairing motorcycle braking systems, including procedures for trapping, storing and disposing of brake dust and brake fluid released from motorcycle braking systems
- operating principles of motorcycle braking systems, including:
    - levers
    - friction
    - hydraulics, including the relationship between force, pressure and area
- properties of brake fluids, including:
    - Department of Transportation (DOT) classification
    - synthetic and non-synthetic
    - compatibility of fluid types
- purpose and operation of motorcycle braking systems and components, including:
    - master cylinders
    - brake fluids
    - disc brake systems, including:
        - types of brake discs
        - disc pads
        - self-adjustment of disc pads
        - fixed, floating and multi-piston brake callipers
    - drum brake systems, including:
        - self-energising, servo effect
        - mechanically operated systems
        - hydraulically operated systems
        - manual and self-adjustment systems
    - combined braking systems
- diagnostic testing procedures for motorcycle braking systems, including procedures for:
    - operational tests of master cylinder
    - testing brake fluid
    - operational tests of hand brake
    - operational tests of drum and disc brakes
    - measuring and evaluating brake drums, shoes, discs and pads

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- repair procedures for motorcycle braking systems, including procedures for:
  - removing, replacing and adjusting braking system components, including master cylinder, switches, brake hoses and lines, rods and cables, disc callipers and disc pads, brake drums, brake shoes and wheel cylinders
  - removing, replacing and adjusting braking system components, including brake lever, rods and cables, brake drums and brake shoes
  - bleeding brakes
- post-repair testing procedures for motorcycle braking systems, including procedures for road testing and bedding in brakes.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motorcycle repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle braking system specifications
- two different motorcycles with faults in the braking systems specified in the performance evidence
- diagnostic equipment for motorcycle braking systems
- tools, equipment and materials appropriate for repairing motorcycle braking systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURJTD103 Diagnose and repair motorcycle suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair motorcycle suspension systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical - Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair motorcycle suspension system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace

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ELEMENTS	PERFORMANCE CRITERIA
	procedures
2. Diagnose motorcycle suspension system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair motorcycle suspension system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions

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SKILL	DESCRIPTION
	• Obtains information from customers and supervisors.
Numeracy	• Measures suspension system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURJTD003 Diagnose and repair motorcycle suspension systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTD103 Diagnose and repair motorcycle suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the front suspension systems of at least two different motorcycles, in which the work must involve:
  - removing, dismantling, reassembling, refitting and adjusting front forks
  - changing seals, valves, bushings and oil
- diagnose and repair a fault in the rear suspension systems of at least two different motorcycles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair motorcycle suspension systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair motorcycle suspension systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing motorcycle suspension systems, including procedures for working with:
  - stored energy in springs
  - suspension system oils
  - gas struts
- environmental requirements relating to diagnosing and repairing motorcycle suspension systems, including procedures for trapping, storing and disposing of oils released from suspension systems
- principles of motorcycle suspension systems and associated components, including:
  - brake dive
  - fork spring rate
  - fork compression damping
- purpose and operation of motorcycle suspension systems and components, including:
  - shock absorbers, including:
    - twin shock absorbers
    - mono-shock absorbers
  - telescopic fork suspension
  - inverted telescopic fork suspension
  - front tele-lever and duo-lever
  - rear swing arm suspension (twin-sided, mono-shock and para-lever)
  - gas struts
- diagnostic testing procedures for motorcycle suspension systems, including procedures for analysing:
  - performance
  - component wear
  - abnormal system noise
- repair procedures for motorcycle suspension systems, including procedures for:
  - adjusting pre-load and damping
  - removing, dismantling, reassembling and replacing components, including:
    - seal, bushing and valve replacement
    - oil replacement
    - air purging
  - replacing front fork slider bushes
  - removing and replacing rear shock absorbers
  - dismantling and repairing rear shock absorbers
  - repairing steering damper assemblies
- post-repair testing procedures for motorcycle suspension systems.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motorcycle repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle suspension system specifications
- two different motorcycles with faults in the front suspension systems specified in the performance evidence
- diagnostic equipment for motorcycle suspension systems
- tools, equipment and materials appropriate for repairing motorcycle suspension systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTD104 Diagnose and repair motorcycle steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair motorcycle steering systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical - Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair motorcycle steering system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace

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ELEMENTS	PERFORMANCE CRITERIA
	procedures
2. Diagnose motorcycle steering system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair motorcycle steering system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.

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SKILL	DESCRIPTION
Numeracy	• Measures steering system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURJTD004 Diagnose and repair motorcycle steering systems.

Links

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Assessment Requirements for AURJTD104 Diagnose and repair motorcycle steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the steering systems of at least two different motorcycles, in which the work for each must involve removing, refitting or replacing, and adjusting the following:
  - headset bearings
  - front fork units in the triple clamps
  - handlebars.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair motorcycle steering systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair motorcycle steering systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing motorcycle steering systems, including procedures for:
  - working with stored energy in springs
  - handling steering system bearing grease
- environmental requirements relating to diagnosing and repairing motorcycle steering systems
- operating principles of motorcycle steering systems, including:
  - wheelbase
  - steering axis angle
  - fork offset
  - fork length
  - trail
  - wheel flop
- purpose and operation of motorcycle steering systems and components, including:
  - head tubes
  - headset bearings
  - triple clamps
  - hydraulic steering dampers
- diagnostic testing procedures for motorcycle steering systems, including procedures for analysing:
  - abnormal system noises
  - component wear analysis
- repair procedures for motorcycle steering systems, including procedures for:
  - removing, refitting and adjusting triple clamp forks
  - aligning front axles
- post-repair testing procedures for motorcycle steering systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle steering systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motorcycle repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle steering system specifications

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- two different motorcycles with faults in the steering systems specified in the performance evidence
- diagnostic equipment for motorcycle steering systems
- tools, equipment and materials appropriate for repairing motorcycle steering systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTD105 Diagnose complex faults in motorcycle steering and suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in motorcycle steering and suspension systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The steering and suspension systems include those in motorcycles or all-terrain vehicles (ATVs).

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical – Steering and suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery.
Reading	• Identifies, organises and interprets technical information

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SKILL	DESCRIPTION
	from manufacturer and workshop literature when seeking steering and suspension system specifications and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures steering and suspension system components and uses basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interpret units, such as amperes, ohms, and volts.
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURJTD005 Diagnose complex faults in motorcycle steering and suspension systems.

Links

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Assessment Requirements for AURJTD105 Diagnose complex faults in motorcycle steering and suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose complex steering and suspension system faults in at least three different motorcycles, including:
  - at least one steering system fault
  - at least one suspension system fault
- develop a testing strategy in the course of the above work to diagnose the cause of at least two of the following types of complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in motorcycle or ATV steering and suspension system, including:
  - motorcycle or ATV steering and suspension system manufacturer specifications
- workplace procedures required to diagnose complex faults in motorcycle or ATV steering and suspension systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in motorcycle steering and suspension systems, including procedures for:
    - lifting and supporting motorcycles
    - working with stored energy in springs
    - handling steering system bearing grease
- environmental requirements relating to motorcycle steering and suspension systems
- types of complex faults relating to motorcycle steering and suspension systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- testing procedures for motorcycle steering and suspension systems, including:
    - abnormal noise analysis
    - component failure analysis
- types and key features of motorcycle steering and suspension systems, including:
    - telescopic forks, including:
        - fork tubes
        - gaiters
        - stanchions
        - triple clamps
        - steering dampers
        - upside down forks
        - anti-dive fork systems
    - trailing link fork suspension
    - leading link fork suspension, including:
        - springer fork
        - Earles fork
        - girder fork
        - Saxon-Motodd (telelever) fork
        - duolever front suspension (Hossack or Fior)
        - coaxial steering front suspension
    - non-fork front suspension, including hub centre steering
    - rear suspension, including:
        - twin shock swingarm
        - monoshock swingarm
        - monoshock single sided swingarm
        - rear monolever

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    - rear paralever
- steering angles, including:
    - wheelbase
    - trail
    - offset
    - rake angle.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle steering and suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle steering and suspension specifications
- three different motorcycles with complex faults in their steering and suspension systems
- diagnostic equipment for motorcycle steering and suspension systems
- tools, equipment and materials appropriate for diagnosing complex faults in motorcycle steering and suspension systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURJTE101 Diagnose and repair motorcycle engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the engines of motorcycles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair engine	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace

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ELEMENTS	PERFORMANCE CRITERIA
	procedures
2. Diagnose engine	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Dismantle engine	3.1 Identify tools and equipment required to dismantle engine and establish serviceability according to workplace procedures 3.2 Dismantle engine, clean and inspect components according to workplace procedures, workplace health and safety and environmental requirements 3.3 Measure and compare components against manufacturer specifications 3.4 Confirm recommendations for necessary repairs according to workplace procedures
4. Repair and re-assemble engine	4.1 Identify required information for repair activity 4.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 4.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.4 Re-assemble engine according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.5 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures engine components • Uses mathematical operations • Calculates distances, areas, volumes and tolerances • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURJTE001 Diagnose and repair motorcycle engines.

Links

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Assessment Requirements for AURJTE101 Diagnose and repair motorcycle engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least three different motorcycle engines in which the work must involve removing, dismantling, reassembling, replacing and adjusting the engine cylinder heads
- dismantle and reassemble at least one of the above engines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair motorcycle engines, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair motorcycle engines, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing motorcycle engines, including procedures for lifting and supporting motorcycle engines
- environmental requirements relating to diagnosing and repairing motorcycle engines, including procedures for trapping, storing and disposing of fluids released from engines

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- operating principles of motorcycle engines, including:
  - combustion, including:
    - air-fuel ratios and combustion cycles
    - direct injection
    - detonation
  - engine design, including:
    - swept volume and engine volume
    - compression ratio
    - engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
    - torque and horsepower, including brake horsepower
- diagnostic testing procedures for motorcycle engines, including:
  - wet and dry compression tests
  - cylinder leakage tests
  - oil pressure tests
  - checking sources of fluid leaks
  - exhaust smoke diagnosis
  - checking abnormal engine noises
- dismantling procedures for motorcycle engines, including procedures for:
  - measuring clearances and tolerances
  - inspecting components
- repair procedures for motorcycle engines, including procedures for removing, replacing and adjusting them
- assembly procedures for motorcycle engines, including procedures for:
  - fitting components
  - checking tolerances and clearances
  - torquing retaining bolts
- post-repair testing procedures for motorcycle engines, including:
  - checking oil pressure
  - road testing under load
  - checking for fluid leaks.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle engines that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motorcycle repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle engine specifications
- three different motorcycles with engine faults
- diagnostic equipment for motorcycle engines
- tools, equipment and materials appropriate for repairing motorcycle engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURJTE102 Diagnose complex faults in motorcycle engine and transmission systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in motorcycle engine and transmission systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The engine and transmission systems include those in motorcycles or all-terrain vehicles (ATVs).

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical – Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery.

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SKILL	DESCRIPTION
Reading	• Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking engine and transmission system specifications and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures engine and transmission system components and uses basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interpret units, such as amperes, ohms, and volts.
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment • Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURJTE002 Diagnose complex faults in motorcycle engine and transmission systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTE102 Diagnose complex faults in motorcycle engine and transmission systems

Modification History

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Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose at least one complex fault in each of the following:
  - engine system of a motorcycle
  - manual transmission of a second motorcycle
  - automatic transmission or continuously variable transmission (CVT) of a third motorcycle
- develop a testing strategy in the course of the above to diagnose the cause of at least two of the following types of complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in motorcycle or ATV engine and transmission system, including:
  - motorcycle or ATV engine and transmission system manufacturer specifications
- workplace procedures required to diagnose complex faults in motorcycle or ATV engine and transmission systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in motorcycle engine and transmission systems, including procedures for:
    - lifting and supporting motorcycles
- environmental requirements relating to motorcycle engine and transmission systems, including procedures for:
    - trapping, storing and disposing of fluids released from engine and transmission systems
- types of complex faults relating to motorcycle engine and transmission systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types, function and operation of motorcycle engine and transmission systems, including:
    - two and four-stroke air and liquid-cooled engines
    - manual transmissions
    - automatic transmissions
    - CVT
- testing procedures for motorcycle engine and transmission systems, including procedures for:
    - vehicle dynamic and static testing
    - abnormal noise analysis
    - component failure analysis
- operation and limitations of diagnostic testing equipment required to diagnose complex faults in motorcycle engine and transmission systems, including:
    - procedures for accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs), including conditions that set and run the DTCs
        - live data
        - freeze frame data
        - waveforms
        - motorcycle continuous and non-continuous monitored systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle engine and transmission systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle engine and transmission system specifications
- three different motorcycles with complex faults in their engine and transmission systems
- motorcycle engine and transmission system diagnostic equipment
- tools, equipment and materials appropriate for diagnosing complex faults in motorcycle engine and transmission systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURJTE103 Inspect and service motorcycle engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service motorcycle engines. It involves preparing for the task, inspecting the engine, reporting the inspection findings, servicing and adjusting the engine, and completing workplace processes and documentation.

The unit applies to those working on motorcycles in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service engine	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret servicing information 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for servicing activity and establish serviceability according to workplace procedures
2. Inspect motorcycle engine	2.1 Carry out inspection according to manufacturer specifications, workplace procedures, workplace health and

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ELEMENTS	PERFORMANCE CRITERIA
	safety and environmental requirements 2.2 Compare inspection results with manufacturer specifications 2.3 Report inspection findings and recommendations for necessary repairs according to workplace procedures
3. Service motorcycle engine	3.1 Carry out service and adjustments according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 3.2 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets information from manufacturer and workshop literature when seeking engine service procedures and specifications.
Oral communication	• Clarifies instructions.
Numeracy	• Calculates liquid volumes and service schedule intervals, using mathematical operations, including addition and subtraction.

Unit Mapping Information

New unit.

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Links

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Assessment Requirements for AURJTE103 Inspect and service motorcycle engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service the engines of two different motorcycles, and for each engine the work must involve:
  - inspecting the vehicle for oil and fluid leaks
  - inspecting and shim adjusting the valve clearances of a single cylinder engine
  - analysing abnormal engine noises
  - inspecting ancillary components
  - replacing the engine oil and filters
  - starting up and running engine to operating temperature
  - checking for leaks and abnormal noises.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service motorcycle engines, including:
  - vehicle manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service motorcycle engines, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to inspecting and servicing engines, including procedures for working with:
    - rotating and hot components
    - engine oils
    - high energy ignition and charging systems
- environmental requirements relating to inspecting and servicing engines, including procedures for:
    - trapping, storing and disposing of fluids released from engines
- identification and function of major engine components, including:
    - cylinder block and head
    - piston and connecting rod
    - crankshaft
    - valve train
    - manifolds
    - ports and reed valve
- identification and function of engine systems, including:
    - lubrication
    - cooling system
    - fuel system
    - air system
- basic operation of spark ignition engines and compression ignition engines, including:
    - two-stroke spark ignition engines
    - four-stroke spark ignition engines
- types and applications of engine configurations, including:
    - two-stroke spark ignition engines
    - four-stroke spark ignition engines
- types and applications of engine oils and filters
- inspection procedures for engines, including:
    - oil and fluid leaks
    - ancillary components, including:
        - mountings
        - belts, pulleys and hoses
- service and adjustment procedures for engines, including:
    - adjusting or replacing engine components
    - replacing oil
    - replacing filter
    - valve clearances
- post-service testing procedures for engines.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle engine specifications
- two different motorcycles for servicing as specified in the performance evidence
- tools, equipment and materials appropriate for inspecting and servicing motorcycle engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURJTE104 Diagnose and repair motorcycle engine management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the motorcycle engine management systems of motorcycles. The unit involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The electrical and electronic systems include those in motorcycles or all-terrain vehicles (ATVs).

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair engine management system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose engine management system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair engine management system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets text, symbols and wiring diagrams in information

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SKILL	DESCRIPTION
	relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTE104 Diagnose and repair motorcycle engine management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the engine management systems of at least three different motorcycles or all-terrain vehicles (ATVs), including:
  - faults in at least two system input sensors
  - faults in at least one system output actuator.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair motorcycle engine management systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair motorcycle engine management systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) relating to diagnosing and repairing motorcycle engine management systems, including procedures for:

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    - using specialised tools and equipment
    - using appropriate personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with:
        - working on vehicle high voltage ignition systems
        - wearing jewellery while working around high current wiring systems
        - working with high pressure petrol fuel systems
- environmental requirements relating to diagnosing and repairing motorcycle engine management systems
- operating principles of motorcycle engine management systems and associated components, including:
    - combustion, including:
        - air-fuel ratios and chemistry of combustion
        - composition of petrol fuel, including octane rating
        - indirect and direct fuel injection
- purpose and operation of motorcycle engine management systems and components, including:
    - fuel system, including:
        - fuel filters
        - fuel pumps
        - fuel pressure regulators
        - fuel injectors
    - electronic control system, including the following system inputs:
        - throttle position sensors
        - coolant temperature sensors
        - oxygen sensors
        - intake air temperature sensors
        - crankshaft position sensors
        - camshaft position sensors
        - battery voltage
        - knock sensors
    - key features of electronic control units (ECUs), including:
        - long-term fuel trim (LTFT)
        - short-term fuel trim (STFT)
        - sensor reference voltages and sensor grounds
    - system outputs, including:
        - Pulse Air Injection Recirculation (PAIR) solenoid controls
        - injectors
        - fuel pump relays
        - engine cooling fans
        - throttle motor (drive by wire) controls

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    - variable valve timing controls
  - ignition systems and components, including:
    - spark plugs
    - ignition leads
    - ignition coils, including electromagnetic induction
    - ignition timing, including varying ignition timing according to engine load, speed and knock sensor input
    - dwell period
- diagnostic testing procedures for motorcycle engine management systems, including:
  - diagnostic flow charts
  - fuel system testing, including:
    - low pressure fuel system testing
    - high pressure fuel system testing
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - injector testing
    - sensor testing
    - actuator testing
  - accessing and interpreting industry-relevant test equipment data, including:
    - diagnostic trouble codes (DTC)
    - live data
    - freeze frame data
- repair procedures for motorcycle engine management systems, including procedures for:
  - removing and replacing the following electrical or electronic components:
    - sensors
    - actuators, including fuel injectors and fuel pumps
  - adjusting and recalibrating components and associated systems
- post-repair testing procedures, including procedures for:
  - clearing fault codes
  - assessing engine performance
  - checking for electrical connector mating.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle engine management systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle engine management system specifications
- three different motorcycles or ATV's with faults in their engine management systems as specified in the performance evidence
- diagnostic equipment for motorcycle engine management systems
- tools, equipment and materials appropriate for repairing motorcycle engine management systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTQ102 Diagnose and repair motorcycle driveline systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the driveline systems of motorcycles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical – Driveline and Final Drives

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair motorcycle driveline system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace

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ELEMENTS	PERFORMANCE CRITERIA
	procedures
2. Diagnose motorcycle driveline system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair motorcycle driveline system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.

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SKILL	DESCRIPTION
Numeracy	• Measures driveline system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURJTQ002 Diagnose and repair motorcycle driveline systems.

Links

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Assessment Requirements for AURJTQ102 Diagnose and repair motorcycle driveline systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the following driveline systems of at least three different motorcycles, each time repairing a different one of the following:
  - one chain drive system, in which the work must involve removing, replacing or refitting the chain and sprockets
  - one belt drive system, in which the work must involve removing, replacing or refitting the belt and sprockets
  - one shaft drive system, in which the work must involve removing, replacing or refitting the drive shaft.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair motorcycle driveline systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair motorcycle driveline systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing motorcycle driveline systems, including procedures for handling shaft and chain driveline oils and lubricants
- environmental requirements relating to diagnosing and repairing motorcycle driveline systems, including procedures for trapping, storing and disposing of oils released from shaft and chain drivelines
- purpose and operation of motorcycle driveline systems and components, including:
    - chain drive systems, including:
        - chain construction, including chain pitch, roller width and roller diameter
        - cush drives
        - types of sprockets
    - belt drive systems, including:
        - belt construction
        - methods of tensioning belts
    - shaft drive systems, including:
        - side gear assemblies
        - final gear assemblies
- diagnostic testing procedures for motorcycle driveline systems, including procedures for analysing:
    - component wear
    - abnormal system noise
- repair procedures for motorcycle driveline systems, including procedures for:
    - repairing chain drives, including:
        - procedures for removing and refitting front and rear chain sprockets
        - procedures for removing chains and fitting new chains
        - procedures for adjusting chain tension and wheel alignment
    - repairing belt drives, including:
        - procedures for removing and refitting toothed belt sprockets
        - procedures for removing belts and fitting new belts
        - procedures for measuring and adjusting belt tension and wheel alignment
    - repairing shaft drive systems
- post-repair testing procedures for motorcycle driveline systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle driveline systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motorcycle repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle driveline system specifications
- one motorcycle with a fault in its chain drive system
- one motorcycle with a fault in its belt drive system
- one motorcycle with a fault in its shaft drive system
- diagnostic equipment for motorcycle driveline systems
- tools, equipment and materials appropriate for repairing motorcycle driveline systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURJTR102 Diagnose and repair motorcycle charging systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair motorcycle charging systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The charging systems include those in motorcycles or all-terrain vehicles (ATVs).

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair motorcycle charging system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose motorcycle charging system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair motorcycle charging system	3.1 Identify required information for repair activity 3.2 Identify required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment

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SKILL	DESCRIPTION
	from manufacturer specifications and workplace instructions and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Matches alternator types and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

New unit.

Links

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Assessment Requirements for AURJTR102 Diagnose and repair motorcycle charging systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two different motorcycles in which the fault for each must involve a different component from among the following:
  - external regulator/rectifier assembly
  - power and earth circuits linking alternator and battery
  - motorcycle charging system circuit
  - alternator control
  - alternator output.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair motorcycle charging systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair motorcycle charging systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing motorcycle charging systems, including procedures for:
    - using specialised tools and equipment
    - using appropriate personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with:
        - working on high voltage ignition systems
        - wearing jewellery while working around high current wiring systems
- operating principles of motorcycle charging systems and associated components, including:
    - motorcycle charging batteries with direct current
    - vehicle system power and electrical current requirements
    - generating principles, including Faraday's law and inducing an electromotive force (EMF)
    - producing direct current (DC) EMF
    - producing alternating current (AC) EMF
    - changing AC to DC, including half-wave and full-wave rectification
- purpose and operation of motorcycle charging systems and components, including:
    - alternators, including:
        - internal component function and operation
        - external components and drive function and operation
        - star-connected and delta-connected stator windings
        - excited field winding and permanent magnet type alternators
        - regulation of output voltage, including zener diodes and exciter diodes
    - battery management systems
- diagnostic testing procedures for motorcycle charging systems, including:
    - using diagnostic flow charts
    - testing electrical systems, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - load testing motorcycle charging systems
        - resistance, current flow and voltage drop checks of motorcycle charging system circuits
- repair procedures for motorcycle charging systems, including:
    - tightening connections
    - replacing faulty or damaged cable connections
    - removing and replacing faulty or damaged components
- post-repair testing procedures for motorcycle charging systems, including:
    - checking for electrical connector mating
    - static and dynamic performance tests of motorcycle charging systems.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle charging systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle charging system specifications
- two different motorcycles with faults in their charging systems as specified in the performance evidence
- diagnostic equipment for motorcycle charging systems
- tools, equipment and materials appropriate for repairing motorcycle charging systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURJTR103 Diagnose and repair motorcycle starting systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair motorcycle starting systems. The systems used vary based on the work context. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The charging systems include those in motorcycles or all-terrain vehicles (ATVs).

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair motorcycle starting system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose motorcycle starting system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair motorcycle starting system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets text, symbols and wiring diagrams in information

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SKILL	DESCRIPTION
	relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Matches alternator types and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTR103 Diagnose and repair motorcycle starting systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the starting system of two different motorcycles or all-terrain vehicles (ATV's) in which the fault for each is within a different circuit chosen from the following:
  - vehicle starter motor and solenoid circuit
  - vehicle ignition switch to solenoid control circuit
  - vehicle battery to starter motor circuit
  - motorcycle starting system circuit.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair motorcycle starting systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair motorcycle starting systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing motorcycle starting systems, including procedures for:
    - using specialised tools and equipment
    - using appropriate personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with:
        - working on high voltage ignition systems
        - wearing jewellery while working around high current wiring systems
- operating principles of motorcycle starting systems and associated components, including:
    - producing movement due to the force between magnetic fields
    - producing magnetic fields due to current flow through conductors
    - basic direct current motor operation, including simple armature, magnetic field and commutator
- purpose and operation of motorcycle starting systems and components, including:
    - high current systems, including:
        - armature, commutator, field windings
        - starter motor windings
        - permanent magnet starter motors
        - direct drive and reduction-type starter motors
    - motorcycle starting electrical systems, including:
        - solenoids
        - shift levers
        - overrunning clutch flywheel ring gears
    - control circuits systems, including:
        - ignition switching, including key start and push-button start
        - safety switches, including inhibitor switches and clutch neutral switches
- diagnostic testing procedures for motorcycle starting systems, including:
    - using diagnostic flow charts
    - testing electrical systems, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - load testing motorcycle starting systems
        - resistance, current flow and voltage drop checks of motorcycle starting system circuits
    - solenoid test
    - overrunning clutch and pinion tests
    - starter motor bench test
- repair procedures for motorcycle starting systems, including:
    - tightening connections
    - replacing faulty or damaged cable connections

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  - removing and replacing faulty or damaged components
- post-repair testing procedures for motorcycle starting systems, including:
  - checking for electrical connector mating
  - static and dynamic performance tests of motorcycle starting systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle starting systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle starting system specifications
- two different motorcycles or ATV’s with faults in their starting systems as specified in the performance evidence
- diagnostic equipment for motorcycle starting systems
- tools, equipment and materials appropriate for repairing motorcycle starting systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTR104 Diagnose and repair motorcycle dynamic control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair motorcycle dynamic control systems. These systems include the functions of a motorcycle electronic braking control module (EBCM), such as anti-lock braking, traction control, anti-dive control and front wheel lift control. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The dynamic control systems include those in motorcycles or all-terrain vehicles (ATVs).

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair motorcycle dynamic control system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and

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ELEMENTS	PERFORMANCE CRITERIA
	implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose motorcycle dynamic control system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair motorcycle dynamic control system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm motorcycle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, motorcycle, machinery and component part lists, and manufacturer specifications • Interprets motorcycle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

New Unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTR104 Diagnose and repair motorcycle dynamic control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the dynamic control systems of:
  - at least one motorcycle with an anti-lock braking system (ABS)
  - at least one motorcycle with a traction control system (TCS).

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair motorcycle dynamic control systems, including:
  - information provided by customer and supervisors
  - motorcycle dynamic control systems manufacturer specifications
- workplace procedures required to diagnose and repair motorcycle dynamic control systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing motorcycle dynamic control systems, including procedures for:
  - using specialised tools and equipment

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    - using appropriate personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with:
        - working on motorcycle high voltage ignition systems
        - wearing jewellery while working around high current wiring systems
- operating principles of motorcycle dynamic control systems and associated components, including:
    - anti-lock braking
    - brake assist
    - traction control
- purpose and operation of motorcycle dynamic control systems and components, including:
    - ABS, including system inputs, electronic control unit (ECU), ABS modulator, and system outputs
    - TCS, including system inputs, ECU, and system outputs, including associated throttle and braking system controls
    - electronic stability control (ESC), including system inputs, steering angle sensors, and ECU and system outputs, including associated throttle and braking system controls
- diagnostic testing procedures for motorcycle dynamic control systems, including:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - waveforms
    - using diagnostic flow charts
    - testing electrical systems, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - determining damage to system wiring and connectors
- repair procedures for motorcycle dynamic control systems, including:
    - connector removal and replacement procedures
    - removal and replacement procedures for motorcycle dynamic control system components
- post-repair testing procedures for motorcycle dynamic control systems, including:
    - DTC clearing procedures
    - checking for electrical connector mating.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle dynamic control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle dynamic control system specifications
- two different motorcycles with faults in their dynamic control systems
- diagnostic equipment for motorcycle dynamic control systems
- tools, equipment and materials appropriate for repairing motorcycle dynamic control systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTX101 Diagnose and repair motorcycle clutch systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the clutch systems of motorcycles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical – Transmissions

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair motorcycle clutch system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace

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ELEMENTS	PERFORMANCE CRITERIA
	procedures
2. Diagnose motorcycle clutch system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair motorcycle clutch system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.

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SKILL	DESCRIPTION
Numeracy	• Measures clutch system components • Uses mathematical operations • Calculates distances, areas and tolerances • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURJTX001 Diagnose and repair motorcycle clutch systems.

Links

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Assessment Requirements for AURJTX101 Diagnose and repair motorcycle clutch systems

Modification History

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Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two of the following motorcycle clutch systems:
  - wet multi-plate clutch system, in which the work must involve removing, replacing or refitting the clutch pack
  - cable operated clutch system
  - hydraulic operated clutch system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair motorcycle clutch systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair motorcycle clutch systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing motorcycle clutch systems, including procedures for handling transmission fluids and clutch materials
- environmental requirements relating to diagnosing and repairing motorcycle clutch systems, including procedures for trapping, storing and disposing of fluids released from transmissions and clutches
- operating principles of motorcycle clutch systems and associated components, including coefficient of friction
- purpose and operation of motorcycle clutch systems and components, including:
  - pressure plates, including:
    - coil spring
    - diaphragm
  - types and compatibility of clutch system oils and additives
  - clutch operating systems, including:
    - cable
    - hydraulic
- diagnostic testing procedures for motorcycle clutch systems, including procedures for analysing:
  - component wear
  - abnormal system noise
- repair procedures for motorcycle clutch systems, including procedures for removing, dismantling, reassembling and adjusting them
- post-repair testing procedures for motorcycle clutch systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle clutch systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motorcycle repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle clutch system specifications
- two different motorcycles with faults in the clutch systems specified in the performance evidence
- diagnostic equipment for motorcycle clutch systems
- tools, equipment and materials appropriate for repairing motorcycle clutch systems.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURJTX102 Diagnose and repair motorcycle manual transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the manual transmissions of motorcycles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical – Transmissions

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair motorcycle manual transmission	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose motorcycle manual transmission	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair motorcycle manual transmission	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions

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SKILL	DESCRIPTION
	• Obtains information from customers and supervisors.
Numeracy	• Measures manual transmission components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURJTX002 Diagnose and repair motorcycle manual transmissions.

Links

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Assessment Requirements for AURJTX102 Diagnose and repair motorcycle manual transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two different motorcycles with different manual transmissions, in which the work must involve removing, dismantling, reassembling and refitting the transmissions.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair motorcycle manual transmissions, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair motorcycle manual transmissions, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing motorcycle manual transmissions, including procedures for handling transmission fluids and clutch materials

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- environmental requirements relating to diagnosing and repairing motorcycle manual transmissions, including procedures for trapping, storing and disposing of fluids released from manual transmissions
- operating principles of motorcycle manual transmissions and associated components, including:
  - gear types
  - gear ratios
- purpose and operation of motorcycle manual transmissions and components, including:
  - transmission types, including:
    - vertical split-type crankcase
    - horizontal split-type crankcase
    - cassette-type
  - sliding gear transmissions, including:
    - dog clutches
    - shifter drums
    - cam plates
  - constant-mesh transmissions, including ball lock-type systems
  - quick shifters
  - types and compatibility of transmission system oils and additives
- diagnostic testing procedures for motorcycle manual transmissions, including:
  - abnormal noise
  - component wear
- repair procedures for motorcycle manual transmissions, including procedures for dismantling, reassembling, refitting and adjusting them
- post-repair testing procedures for motorcycle manual transmissions.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle manual transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motorcycle repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle manual transmission specifications
- two different motorcycles with different manual transmissions with faults

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- diagnostic equipment for motorcycle manual transmissions
- tools, equipment and materials appropriate for repairing motorcycle manual transmissions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURJTX103 Diagnose and repair motorcycle automatic transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the automatic transmissions of motorcycles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Motorcycle Technical – Transmissions

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair motorcycle automatic transmission	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose motorcycle automatic transmission	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair motorcycle automatic transmission	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions

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SKILL	DESCRIPTION
	• Obtains information from customers and supervisors.
Numeracy	• Measures automatic transmission components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURJTX003 Diagnose and repair motorcycle automatic transmissions.

Links

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Assessment Requirements for AURJTX103 Diagnose and repair motorcycle automatic transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two different motorcycles with different automatic transmissions, in which the work must involve removing, dismantling, reassembling and refitting the transmissions.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair motorcycle automatic transmissions, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair motorcycle automatic transmissions, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing motorcycle automatic transmissions, including procedures for handling transmission fluids and clutch materials

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- environmental requirements relating to diagnosing and repairing motorcycle automatic transmissions, including procedures for trapping, storing and disposing of fluids released from automatic transmissions
- operating principles of motorcycle automatic transmissions and associated components, including:
  - gears types
  - gear ratios
- purpose and operation of motorcycle automatic transmissions and components, including:
  - continuously variable transmissions (CVT), including:
    - wet types
    - dry types
  - semi-automatic transmissions
  - dual clutch transmissions
  - automatic transmission electronic components, including:
    - electronic control module
    - input sensors, including vehicle speed sensor, throttle position sensor, mass air flow (MAF) sensor, manifold absolute pressure (MAP) sensor, transmission range sensor, engine speed sensor and temperature sensors
    - electronic control module outputs, including indicator lamps, shift solenoids and pressure control solenoids
- types and compatibility of transmission system oils and additives
- types of diagnostic trouble codes and procedures for accessing codes
- diagnostic testing procedures for motorcycle automatic transmissions, including:
  - component wear
  - abnormal system noise
- repair procedures for motorcycle automatic transmissions, including procedures for removing, dismantling, reassembling, refitting and adjusting components
- post-repair testing procedures for motorcycle automatic transmissions.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle automatic transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motorcycle repair workplace or simulated workplace

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- workplace instructions
- manufacturer motorcycle automatic transmission specifications
- two different motorcycles with different automatic transmissions with faults
- diagnostic equipment for motorcycle automatic transmissions
- tools, equipment and materials appropriate for repairing motorcycle automatic transmissions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTA109 Diagnose complex faults in mobile plant hydraulic systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in mobile plant hydraulic systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The hydraulic systems include those of agricultural machinery or mobile plant machinery, which may be wheeled or track type machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Mobile Plant Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENTS	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings

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SKILL	DESCRIPTION
	• Applies diagnostic skills to different vehicles or machinery.
Reading	• Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking mobile plant hydraulic system specifications and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures hydraulic system components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications • Uses gauges and interpret units, including kilopascals and pounds per square inch (PSI).
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment • Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURKTA009 Diagnose complex faults in mobile plant hydraulic systems.

Links

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Assessment Requirements for AURKTA109 Diagnose complex faults in mobile plant hydraulic systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in the hydraulic systems of three different mobile plant machinery
- develop a testing strategy in the course of the above work to diagnose the cause of at least two of the following complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in mobile plant hydraulic systems, including:
  - heavy commercial vehicle hydraulic system manufacturer specifications
  - requirements of Australian Standard 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- workplace procedures required to diagnose complex faults in mobile plant hydraulic systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in mobile plant hydraulic systems, including procedures for:
    - managing stored energy in springs and accumulators
    - working with high pressure fluid hazards
    - tagging out and isolating machines, and wheel chocking
- environmental requirements, including procedures for trapping, storing and disposing of hazardous materials and substances released from hydraulic systems
- types of complex faults relating to mobile plant hydraulic systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types, functions and operation of mobile plant hydraulic systems, including:
    - reservoirs
    - accumulators
    - pumps
    - valves
    - actuators
    - motors
    - filters
    - conductors and connectors
- testing procedures for mobile plant hydraulic systems, including procedures for:
    - abnormal noise analysis
    - implement creep
    - oil flow and pressure testing
    - excessive internal leakage in both actuators and pumps
    - component failure analysis
- types, functions, operation and limitations of diagnostic testing equipment required to diagnose complex faults in mobile plant hydraulic systems, including:
    - scan tool
    - oil pressure gauge
    - temperature measuring equipment
    - flow meter
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data

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- waveforms
- vehicle continuous and non-continuous monitored systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant hydraulic systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant hydraulic system specifications
- hydraulic systems of three different mobile plant machinery with complex faults
- mobile plant hydraulic system diagnostic equipment, including:
  - scan tool
  - flow meter
  - oil pressure gauge
  - temperature measuring equipment
- AS 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- tools, equipment and materials appropriate for diagnosing complex faults in mobile plant hydraulic systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURKTA111 Diagnose and repair mobile plant hydraulic systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair mobile plant hydraulic systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The hydraulic systems include those in agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Mobile Plant Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair mobile plant hydraulic system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose mobile plant hydraulic system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair mobile plant hydraulic system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm machinery is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets hydraulic symbols and circuits.

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures hydraulic system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Reads hydraulic system pressures, forces, distances and temperature • Interprets precision measuring equipment including, micrometers, vernier callipers, and flow, temperature and pressure gauges.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURKTA011 Diagnose and repair mobile plant hydraulic systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTA111 Diagnose and repair mobile plant hydraulic systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the hydraulic systems of two different mobile plant or agricultural machinery, including:
  - removing, refitting or replacing at least two different types of hydraulic valves
  - removing, refitting or replacing at least one hydraulic cylinder
- undertake at least two of any of the following in the course of the above work:
  - rebuild hydraulic cylinder
  - rebuild motor or pump
  - remove, refit or replace hose
  - remove, refit or replace pump
  - remove, refit or replace motor
  - remove, refit or replace accumulator.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair mobile plant hydraulic systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - Australian Standard 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- workplace procedures required to diagnose and repair mobile plant hydraulic systems, including:
  - establishing serviceability of tools and equipment

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  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing mobile plant hydraulic systems, including procedures for:
  - using raising, lowering and supporting equipment
  - isolating and stabilising machines
  - working with stored hydraulic pressure
  - working with escaping high pressure oil
  - working with hot fluid hazards
- environmental requirements relating to diagnosing and repairing mobile plant hydraulic systems, including procedures for trapping, storing and disposing of hydraulic fluid released from hydraulic systems
- operating principles of hydraulic systems and associated components, including:
  - transmission of energy by hydraulic fluid
  - mechanical advantage
  - hydraulic circuits, including open and closed centred systems
  - temperature, force, pressure, area and flow
- purpose and operation of systems and components, including:
  - reservoirs
  - gas loaded accumulators
  - pumps, including gear and piston
  - valves, including:
    - directional control, including valve banks
    - pressure control, including spike or circuit protection valving
    - flow control, including meter in and meter out
  - linear and rotary actuators
  - hoses, pipes fittings and couplings
  - heat exchangers
  - hydraulic fluids
  - hydraulic system schematics
- diagnostic testing procedures for hydraulic systems, including:
  - applying and using a flow meter to diagnose faults by carrying out an in-line, bypass or Tee test to evaluate system components
  - visually inspecting hoses, pipes and connectors
  - oil sampling and contamination control

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- repair procedures for hydraulic systems, including procedures for removing, replacing, repairing and adjusting hydraulic system components
- post-repair testing procedures for hydraulic systems, including:
  - operational functionality
  - flow testing.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant hydraulic systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant hydraulic system specifications
- two different mobile plant or agricultural machinery with hydraulic systems requiring the work specified in the performance evidence
- diagnostic tools and equipment for hydraulic systems, including pressure gauges and flow meters
- AS 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- tools, equipment and materials appropriate for repairing and adjusting mobile plant hydraulic systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTB101 Diagnose and repair mobile plant braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the braking systems of agricultural machinery and mobile plant machinery. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The braking systems include those in agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Mobile Plant Technical - Brakes

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair braking system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose braking system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair braking system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm machinery is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures braking system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Interprets braking system hydraulic pressure gauges.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Operates diagnostic and testing equipment • Uses specialised measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURKTB001 Diagnose and repair mobile plant braking systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTB101 Diagnose and repair mobile plant braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two different spring applied hydraulically released mobile plant braking systems
- diagnose and repair a fault in at least one of the following mobile plant braking systems:
  - hydraulic applied
  - full air actuated
  - air over full hydraulic.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair mobile plant braking systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair mobile plant braking systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing mobile plant braking systems, including procedures for:
  - working with high fluid pressure and high pneumatic pressure
  - working with stored hydraulic accumulator pressures and stored pneumatic pressures
  - isolating and stabilising machines
- environmental requirements relating to diagnosing and repairing mobile plant braking systems, including procedures for trapping, storing and disposing of hydraulic fluids, brake fluids and brake fibres released from braking systems
- operating principles of mobile plant braking systems and associated components, including:
  - levers
  - friction
  - pneumatics
  - electronics
  - hydraulics, including the relationship between force, pressure and area
- mobile plant braking systems, including:
  - multi-disc wet braking systems, including associated cooling systems
  - disc braking systems
  - parking brake systems
- purpose and operation of mobile plant braking systems and components, including:
  - air over full hydraulic
  - full air actuated
  - hydraulic applied
  - spring applied hydraulically released
- diagnostic testing procedures for mobile plant braking systems, including procedures for:
  - component wear analysis
  - system operation analysis
- repair procedures for mobile plant braking systems, including procedures for repairing and adjusting the following braking system components:
  - multi-disc wet braking systems, including wheel end and inboard mounted
  - disc braking systems
  - parking brake systems
- post-repair testing procedures for mobile plant braking systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant braking system specifications
- three different mobile plant braking systems specified in the performance evidence
- diagnostic equipment for mobile plant braking systems
- tools, equipment and materials appropriate for repairing and adjusting mobile plant braking systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURKTB103 Diagnose complex faults in mobile plant braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in mobile plant braking systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The braking systems include those of agricultural machinery or mobile plant machinery, which may be wheeled or track type machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Mobile Plant Technical - Brakes

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm mobile plant is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different mobile plants or machinery.

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SKILL	DESCRIPTION
Reading	• Interprets workplace instructions, including job cards • Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking braking system specifications and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures braking system components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications • Interprets units, such as kilopascals and pounds per square inch (PSI).
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment • Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURKTB003 Diagnose complex faults in mobile plant braking systems.

Links

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Assessment Requirements for AURKTB103 Diagnose complex faults in mobile plant braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in the braking systems of at least three different pieces of mobile plant equipment
- in the course of the above work, develop a testing strategy to diagnose the cause of at least two of the following complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in mobile plant braking systems, including:
  - mobile plant braking system manufacturer specifications
- workplace procedures required to diagnose complex faults in mobile plant braking systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in mobile plant braking systems, including procedures for:
    - managing stored energy in springs and accumulators
    - working with high pressure fluid hazards
    - tagging out and isolating machines, and wheel chocking
- environmental requirements, including procedures for trapping, storing and disposing of hazardous materials and substances released from braking systems, including hydraulic fluid, brake fluid and brake fibres
- types of complex faults relating to mobile plant braking systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types, functions and operation of mobile plant braking systems, including:
    - hydraulic pressurised
    - spring applied hydraulically released
    - braking systems, including:
        - multi-disc wet braking systems, including wheel end and inboard mounted
        - disc braking systems
        - parking brake systems
- testing procedures for mobile plant braking systems, including procedures for:
    - abnormal noise analysis
    - brake performance test
    - oil pressure and flow testing
    - accumulator pressure
    - component failure analysis
- types, and key features of diagnostic testing equipment required to diagnose complex faults in mobile plant braking systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - waveforms
    - mobile plant continuous and non-continuous monitored systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant braking system specifications
- braking systems of three different mobile plant with complex faults
- mobile plant braking system diagnostic equipment, including:
  - scan tool
  - brake performance test equipment
  - oil pressure gauge
  - accumulator pressure gauge
  - component wear gauge
- tools, equipment and materials appropriate for diagnosing complex faults in mobile plant braking systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTD101 Diagnose and repair mobile plant suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair mobile plant suspension systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The suspension systems include those in agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Mobile Plant Technical - Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair mobile plant suspension system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose mobile plant suspension system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair mobile plant suspension system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm machinery is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures suspension system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Interprets suspension system hydraulic and gas pressure gauges.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Operates diagnostic and testing equipment.

Unit Mapping Information

Supersedes and is equivalent to AURKTD001 Diagnose and repair mobile plant suspension systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTD101 Diagnose and repair mobile plant suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least three mobile plant suspension systems as follows:
  - at least one gas charged hydraulic suspension
  - at least two of the following:
    - pivoting axle suspension
    - solid rubber suspension
    - hydraulic suspension.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair mobile plant suspension systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair mobile plant suspension systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing mobile plant suspension systems, including procedures for:
  - suspension lock-out
  - isolating and stabilising machines
  - working with stored fluid pressures from accumulators
  - working with high pressure fluid hazards
  - using lifting, jacking and supporting equipment
- environmental requirements relating to diagnosing and repairing mobile plant suspension systems
- purpose and operation of mobile plant suspension systems and components, including:
  - suspension hydraulic circuitry
  - pivoting axle suspension
  - solid rubber suspension
  - gas charged hydraulic suspension
  - hydraulic suspension
  - pneumatic tyres
- diagnostic testing procedures for mobile plant suspension systems, including procedures for analysing:
  - component wear
  - abnormal system noise
  - suspension cylinder
  - erratic operation
- repair procedures for mobile plant suspension systems, including procedures for:
  - repairing and adjusting suspension components
  - recharging suspension cylinders
- post-repair testing procedures for mobile plant suspension systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant suspension system specifications

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- three different mobile plant suspension systems specified in the performance evidence with system faults
- diagnostic equipment for mobile plant suspension systems
- tools, equipment and materials appropriate for repairing and adjusting mobile plant suspension systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTD102 Diagnose and repair mobile plant steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair mobile plant steering systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The steering systems include those in agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Mobile Plant Technical - Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair mobile plant steering system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose mobile plant steering system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair mobile plant steering system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm machinery is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions

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SKILL	DESCRIPTION
	• Obtains information from customers and supervisors.
Numeracy	• Measures steering system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Interprets steering system hydraulic pressure gauges.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Operates diagnostic and testing equipment.

Unit Mapping Information

Supersedes and is equivalent to AURKTD002 Diagnose and repair mobile plant steering systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTD102 Diagnose and repair mobile plant steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least three mobile plant steering systems as follows:
  - at least one articulated steering system
  - at least two of the following systems:
    - front wheel steering
    - all wheel steering
    - differential steer
    - steering clutch and brake
- inspect and charge one accumulator according to manufacturer specifications and relevant Australian standards.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair mobile plant steering systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair mobile plant steering systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing mobile plant steering systems, including procedures for:
    - isolating and locking articulated steering systems
    - isolating and stabilising machines
    - working with stored fluid pressures from accumulators
    - working with high pressure fluid hazards
    - using lifting, jacking and supporting equipment
- environmental requirements relating to diagnosing and repairing mobile plant steering systems, including procedures for trapping, storing and disposing of hydraulic fluid released from steering systems
- operating principles of mobile plant steering systems and associated components, including full hydraulic steering and:
    - safety protection valves in the circuits
    - hand metering units (HMUs) and flow amplifier
    - hydraulic and electrohydraulic control
    - accumulator steering circuit
- purpose and operation of mobile plant steering systems and components, including:
    - articulated steering
    - front wheel steering
    - all wheel steering
    - differential steer
    - steering clutch and brake
- identification, function and adjustment of toe-in and toe-out steering angles
- diagnostic testing procedures for mobile plant steering systems, including:
    - pressure and flow testing the system and individual components
    - accumulator tests
    - HMU and flow amplifier tests
    - testing the pressure settings on all safety protection valves in the circuit
- repair and adjustment procedures for mobile plant steering systems, including:
    - accumulator inspection and charging procedures that reflect manufacturer specifications and Australian standards
    - pressure settings and adjustment procedures for main and safety protection valves in the steering circuit
- post-repair testing procedures for mobile plant steering systems.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant steering systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant steering system specifications
- three different mobile plant steering systems specified in the performance evidence with system faults
- diagnostic equipment for mobile plant steering systems
- tools, equipment and materials appropriate for repairing and adjusting mobile plant steering systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTD105 Diagnose complex faults in mobile plant steering and suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in mobile plant steering and suspension systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The steering and suspension systems include those of agricultural machinery or mobile plant machinery, which may be wheeled or track type machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Mobile Plant Technical – Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and

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ELEMENTS	PERFORMANCE CRITERIA
	procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm mobile plant is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.4 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different mobile plants or machinery.
Reading	• Identifies, organises and interprets technical information

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SKILL	DESCRIPTION
	from manufacturer and workshop literature when seeking steering and suspension system specifications and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures steering and suspension system components and uses mathematical operations to calculate tolerances and deviations from manufacturer specifications • Interpret units, including kilopascals and pounds per square inch (PSI).
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment • Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURKTD005 Diagnose complex faults in mobile plant steering and suspension systems.

Links

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Assessment Requirements for AURKTD105 Diagnose complex faults in mobile plant steering and suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in each of the following:
  - steering system of a piece of mobile plant machinery
  - suspension system of a different piece of mobile plant machinery
  - steering or suspension system of a third piece of mobile plant machinery
- develop a testing strategy in the course of the above work to diagnose the cause of at least two of the following types of complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in mobile plant steering and suspension systems, including:
  - mobile plant steering and suspension system manufacturer specifications
- workplace procedures required to diagnose complex faults in mobile plant steering and suspension systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS)) requirements relating to diagnosing complex faults in mobile plant steering and suspension systems, including procedures for working with:
    - identifying hazards and controlling risks associated with hazardous materials and substances, including hydraulic fluid and nitrogen gas
    - managing stored energy in springs and accumulators
    - working with high pressure and high temperature fluid hazards
    - tagging out and isolating machines, and wheel chocking
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from steering and suspension systems
- types of complex faults relating to mobile plant steering and suspension systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types, and function of mobile plant steering and suspension systems, including:
    - steering systems, including:
        - articulated steering
        - front wheel steering
        - all wheel steering
        - differential steer
        - steering clutch and brake system
    - suspension systems, including:
        - spring
        - solid rubber
        - gas charged hydraulic
        - hydraulic
- testing procedures for mobile plant steering and suspension systems, including procedures for:
    - operational tests
    - abnormal noise analysis
    - flow, temperature and pressure tests
    - component wear analysis
    - sources of fluid leaks
- types, functions, operation and limitations of diagnostic testing equipment required to diagnose complex faults in mobile plant steering and suspension systems, including flow, temperature and pressure gauges
- procedures for accessing and interpreting scan tool system data, including:

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- diagnostic trouble codes (DTCs), including:
  - conditions that set the DTCs
  - conditions for running DTCs
- live data
- waveforms
- continuous and non-continuous monitored systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant steering and suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant steering and suspension system specifications
- steering and suspension systems of three different mobile plant machinery with complex faults
- mobile plant steering and suspension system diagnostic equipment, including:
  - flow, temperature and pressure gauges
  - scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in mobile plant steering and suspension systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURKTQ101 Diagnose and repair mobile plant final drive assemblies

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the final drive assemblies of mobile plants. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The final drive assemblies include those in agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Mobile Plant Technical – Driveline and Final Drives

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair mobile plant final drive assembly	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose mobile plant final drive assembly	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair mobile plant final drive assembly	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm machinery is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures final drive assembly components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Calculates gear ratios and torque reduction.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURKTQ001 Diagnose and repair mobile plant final drive assemblies.

Links

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Assessment Requirements for AURKTQ101 Diagnose and repair mobile plant final drive assemblies

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair faults in at least two mobile plant final drive assemblies as follows:
  - at least one differential carrier assembly
  - at least one of the following final drive assemblies:
    - double reduction
    - planetary final drive
    - chain drive.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair mobile plant final drive assemblies, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair mobile plant final drive assemblies, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing mobile plant final drive assemblies, including procedures for isolating and stabilising machinery
- environmental requirements relating to diagnosing and repairing mobile plant final drive assemblies, including procedures for trapping, storing and disposing of oils and fluids released from final drive assemblies
- operating principles of mobile plant final drive assemblies and associated components, including:
  - final drive gears, including:
    - gear types and specific lubrication requirements
    - gear ratios and torque reduction and multiplication
  - differential function
  - chain drives
- purpose and operation of mobile plant final drive assemblies and components, including:
  - differential carrier
  - limited slip, no-spin and differential lock
  - double reduction
  - planetary final drive
  - chain drive
- diagnostic testing procedures for mobile plant final drive assemblies, including:
  - sources of fluid leaks
  - abnormal final drive vibration, noises and operation
  - pre-dismantling inspection procedures
- repair procedures for mobile plant final drive assemblies, including procedures for:
  - dismantling final drive assemblies
  - inspecting final drive assemblies
  - reassembling and adjusting the following components:
    - pinion depth
    - pinion bearing preload
    - crown wheel and pinion backlash
    - side bearing preload
    - crown wheel and pinion tooth contact
    - chain drive system
- post-repair testing procedures for mobile plant final drive assemblies.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant final drive assemblies that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant final drive assembly specifications
- two different mobile plant with the final drive assemblies specified in the performance evidence
- diagnostic equipment for mobile plant final drive assemblies
- tools, equipment and materials appropriate for repairing and adjusting mobile plant final drive assemblies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTR101 Diagnose and repair electronic over hydraulic control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair electronic over hydraulic control systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The electronic over hydraulic control systems include those in agricultural machinery, heavy commercial vehicles, marine vessels or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Mobile Plant Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair electronic over hydraulic control system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose electronic over hydraulic control system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair electronic over hydraulic control system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle or machinery is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications • Interprets electronic over hydraulic control symbols and circuits.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures electronic over hydraulic control system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Interprets system hydraulic pressure gauges • Interprets electrical test meters.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Operates diagnostic and testing equipment.

Unit Mapping Information

Supersedes and is equivalent to AURKTR001 Diagnose and repair electronic over hydraulic control systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTR101 Diagnose and repair electronic over hydraulic control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the following electronic over hydraulic control system components:
  - all four of the following:
    - hydraulic proportional control solenoids (flow, pressure and directional)
    - joysticks, potentiometer or touchscreens
    - sensors and feedback devices
    - electronic control amplifier units
  - at least one of the following:
    - electronic over hydraulic circuitry
    - servo control valves (flow, pressure and directional)
    - electronic control unit (ECU).

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair electronic over hydraulic control systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair electronic over hydraulic control systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:

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    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing electronic over hydraulic control systems, including procedures for:
    - working with high pressure fluid hazards
    - isolating and stabilising machines
- environmental requirements relating to diagnosing and repairing electronic over hydraulic control systems
- operating principles of electronic over hydraulic control systems, including operating principles of flow, pressure and directional control in:
    - electronic open loop circuits
    - electronic semi open loop circuits
    - electronic closed loop circuits
- purpose and operation of systems and components, including:
    - hydraulic proportional control solenoids
    - servo control units
    - sensors
    - feedback devices
    - electronic control amplifier units
    - joysticks
    - electronic control units
    - electronic over hydraulic circuitry
- diagnostic testing procedures for electronic over hydraulic control systems, including:
    - electronic system analysis while using industry-relevant test equipment
    - component wear analysis
    - system operation analysis
- repair procedures for electronic over hydraulic control systems, including procedures for:
    - testing electronic devices
    - replacing electronic devices and adjusting the following:
        - maximum and minimum flow points
        - dither
        - opening ramps
        - closing ramps
- post-repair testing procedures for electronic over hydraulic control systems.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electronic over hydraulic control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer electronic over hydraulic control system specifications
- two different electronic over hydraulic control systems with faults as specified in the performance evidence
- diagnostic equipment for electronic over hydraulic control systems
- tools, equipment and materials appropriate for repairing and adjusting mobile plant electronic over hydraulic control systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURKTX101 Diagnose and repair powershift transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in powershift transmissions. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The powershift transmissions include those in agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Mobile Plant Technical – Transmissions

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair powershift transmission	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose powershift transmission	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair powershift transmission	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle or machinery is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions

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SKILL	DESCRIPTION
	• Obtains information from customers and supervisors.
Numeracy	• Measures powershift transmission components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Interprets hydraulic pressure gauges and other measuring equipment.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Operates diagnostic and testing equipment.

Unit Mapping Information

Supersedes and is equivalent to AURKTX001 Diagnose and repair powershift transmissions.

Links

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Assessment Requirements for AURKTX101 Diagnose and repair powershift transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in two different vehicles or machines with the powershift transmissions as follows:
  - one with multiple countershaft transmission
  - one with planetary shift transmission
- conduct powershift transmission stall test during above work according to manufacturer specifications and workplace procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair powershift transmissions, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair powershift transmissions, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing powershift transmissions, including procedures for isolating and stabilising machines
- environmental requirements relating to diagnosing and repairing powershift transmissions, including procedures for trapping, storing and disposing of hydraulic fluid released from powershift transmissions
- operating principles of powershift transmissions and associated components, including:
  - torque converters, torque divider torque converters and variable capacity torque converters
  - electronically modulated transmission
  - countershaft transmissions, including:
    - gear types
    - gear ratios and torque reduction and multiplication
    - simple and compound gear trains
  - compound planetary transmissions, including:
    - gear types
    - gear ratios and torque reduction and multiplication
    - simple and compound planetary gear trains
  - transmission control valves and solenoids
  - hydraulic circuits and schematics
- purpose and operation of powershift transmissions and components, including:
  - power flows in:
    - multiple countershaft transmissions
    - compound planetary transmissions
  - torque converters, torque divider torque converters, and variable capacity torque converters
  - hydraulic components and hydraulic control components, including:
    - oil pumps
    - hydraulic valves
    - electronic transmission pressure modulation
    - power train electronic control system
  - mechanical components, including:
    - clutch packs
    - one-way clutches
    - planetary gears
    - compound gear sets
  - powershift electronic control systems
  - transfer cases
  - hydraulic oils and filters
- diagnostic testing procedures for powershift transmissions, including:
  - following safety requirements when stall testing
  - stall testing according to manufacturer specifications and workplace procedures

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- repair procedures for powershift transmissions, including procedures for inspecting, evaluating and measuring component wear
- post-repair testing procedures for powershift transmissions including:
  - stall testing according to manufacturer specifications and workplace procedures.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the powershift transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer powershift transmission specifications
- two different vehicles or machines with powershift transmission faults
- diagnostic equipment for powershift transmissions
- tools, equipment and materials appropriate for repairing and adjusting powershift transmissions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTX103 Diagnose complex faults in mobile plant transmission and driveline systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in mobile plant transmission and driveline systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The transmission and driveline systems include those of agricultural machinery or mobile plant machinery, which may be wheeled or track type machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Mobile Plant Technical - Transmissions

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and

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ELEMENTS	PERFORMANCE CRITERIA
	procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery.
Reading	• Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking transmission and driveline system specifications and procedures.

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures transmission and driveline system components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment • Uses specialised testing equipment.

Unit Mapping Information

Supersedes and is equivalent to AURKTX003 Diagnose complex faults in mobile plant transmission and driveline systems.

Links

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Assessment Requirements for AURKTX103 Diagnose complex faults in mobile plant transmission and driveline systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in each of the following:
  - transmission system of a piece of mobile plant machinery
  - driveline system of a different piece of mobile plant machinery
  - transmission or driveline system of a third piece of mobile plant machinery
- develop a testing strategy in the course of the above work to diagnose the cause of at least two of the following complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in mobile plant transmission and driveline systems, including:
  - mobile plant transmission and driveline system manufacturer specifications
- workplace procedures required to diagnose complex faults in mobile plant transmission and driveline systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in mobile plant transmission and driveline systems, including procedures for:
    - tagging out and isolating machines, and wheel chocking
    - working with rotating shaft hazards
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from transmission and driveline systems
- types of complex faults relating to mobile plant transmission and driveline systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types, and functions of mobile plant transmission and driveline systems, including:
    - transmissions
    - drivelines
    - final drives
- testing procedures for mobile plant transmission and driveline systems, including procedures for:
    - transmission and driveline performance test
    - abnormal noise analysis
    - component wear analysis
    - transmission oil pressure test
    - sources of fluid leaks
- types, functions, operation and limitations of diagnostic testing equipment required to diagnose complex faults in mobile plant transmission and driveline systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - waveforms
    - vehicle continuous and non-continuous monitored systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant transmission and driveline systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant transmission and driveline system specifications
- transmission and driveline systems of three different types of mobile plant machinery with complex faults
- mobile plant transmission and driveline system diagnostic equipment, including:
  - oil pressure gauge
  - scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in mobile plant transmission and driveline systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURKTX104 Diagnose and repair continuously variable transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in continuously variable transmissions. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The continuously variable transmissions include those in agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Mobile Plant Technical – Transmissions

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair continuously variable transmission	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose continuously variable transmission	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair continuously variable transmission	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm machinery is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures continuously variable transmission components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Interprets hydraulic pressure gauges and other measuring equipment.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Operates diagnostic and testing equipment.

Unit Mapping Information

Supersedes and is equivalent to AURKTX004 Diagnose and repair continuously variable transmissions.

Links

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Assessment Requirements for AURKTX104 Diagnose and repair continuously variable transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two different machines with continuously variable transmissions
- remove, refit or replace at least one of the above transmissions.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair continuously variable transmissions, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair continuously variable transmissions, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing continuously variable transmissions, including procedures for:
  - tagging out and isolating machines, and wheel chocking
  - working with high pressure fluid hazards

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    - using lifting, jacking and supporting equipment
- environmental requirements relating to diagnosing and repairing continuously variable transmissions, including procedures for trapping, storing and disposing of hydraulic fluid released from continuously variable transmissions
- operating principles of continuously variable transmissions and associated components, including:
    - hydrostatic systems
    - countershaft transmissions
    - planetary transmissions
    - transmission control valves and solenoids
    - hydraulic circuits and schematics
    - electronic control system
- purpose and operation of continuously variable transmissions and components, including:
    - power flows, including compound planetary transmissions
    - hydrostatic components
    - hydraulic components and hydraulic control components, including:
        - oil pumps
        - air pumps
        - filters
        - hydraulic valves
        - power train electronic control system
    - mechanical components, including clutch packs and compound gear sets
    - continuously variable electronic control system, including:
        - sensors
        - solenoids
        - electronic controllers
        - calibration
- diagnostic testing procedures for continuously variable transmissions that comply with manufacturer specifications, including:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - waveforms
- repair procedures for continuously variable transmissions, including procedures for removing, replacing and adjusting them
- post-repair testing procedures for continuously variable transmissions.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the continuously variable transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer continuously variable transmission specifications
- two different machines with continuously variable transmission faults
- diagnostic equipment for continuously variable transmissions
- tools, equipment and materials appropriate for repairing and adjusting continuously variable transmissions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTA101 Identify automotive mechanical systems and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to identify the function and basic operation of a range of vehicle mechanical systems and components. It involves preparing for the task, locating information on the systems and components, and demonstrating knowledge of mechanical systems.

The unit applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Light Vehicle – Technical

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Locate and identify mechanical system and its components	1.1 Identify task requirements from task instructions including vehicle or machinery to be worked 1.2 Obtain technical information regarding electrical system to be identified 1.3 Identify mechanical system major components according to workplace health and safety requirements and task instructions

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ELEMENT	PERFORMANCE CRITERIA
2. Demonstrate knowledge of mechanical system	2.1 Confirm system function from technical information and demonstrate during workplace activities 2.2 Confirm system major component function and basic operation from technical information and demonstrate during workplace activities 2.3 Confirm system relationship to vehicle or machinery operation is from technical information

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Oral communication	• Participates effectively in verbal exchanges using questioning and active listening to request, clarifies and clearly conveys information
Numeracy	• Uses and communicates basic numerical information that relates to automotive systems and components

Unit Mapping Information

Supersedes and is equivalent to AURLTA001 Identify automotive mechanical systems and components.

Links

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Assessment Requirements for AURLTA101 Identify automotive mechanical systems and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, locate and check of the operation of the following vehicle mechanical systems while carrying out required workplace activities:
  - engine systems
  - transmission and drivetrain
  - steering system
  - suspension system
  - fuel system
  - cooling system
  - braking system
  - exhaust system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- work health and safety (WHS) requirements relating to the identification of vehicle mechanical systems and components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and equipment
  - following workplace safety procedures
- basic theory and principles of automotive mechanical systems, including:
  - mechanical advantage
  - gear ratio
  - hydraulics
  - pneumatics

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- identification, function and basic operation of vehicle mechanical systems and components, including:
  - engine systems
  - transmission and drivetrain
  - steering system
  - suspension system
  - fuel system
  - cooling system
  - braking system
  - exhaust system
- basic automotive terminology relating to mechanical systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles or machinery that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workshop or task instructions
- information regarding basic mechanical principles and fundamentals
- information regarding vehicle mechanical systems and components
- workplace safety equipment, including PPE
- vehicle or a range of automotive mechanical systems and components
- automotive tools and equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTB103 Diagnose and repair light vehicle hydraulic braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the hydraulic braking systems of light vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The hydraulic braking systems include those in light vehicles, light commercial vehicles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical - Brakes

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair light vehicle hydraulic braking system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose light vehicle hydraulic braking system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair light vehicle hydraulic braking system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures hydraulic braking system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTB003 Diagnose and repair light vehicle hydraulic braking systems.

Links

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Assessment Requirements for AURLTB103 Diagnose and repair light vehicle hydraulic braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in:
  - two different light vehicle four-wheel disc hydraulic braking systems, in which the work must involve removing and refitting or replacing the brake callipers, disc pads and disc rotors
  - one light vehicle drum braking system, in which the work must involve removing and refitting or replacing brake drums, brake shoes and wheel cylinders
  - one light vehicle brake master cylinder, in which the work must involve removing and refitting or replacing the brake master cylinder
- carry out diagnostic tests in each of the above tasks for at least one of the following faults:
  - worn brake pads
  - malfunctioning master cylinders
  - contaminated brake fluid.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair light vehicle hydraulic braking systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle hydraulic braking systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:

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    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing light vehicle hydraulic braking systems, including procedures for:
    - lifting and supporting light vehicles
    - handling and controlling brake dust and brake fluids
- environmental requirements relating to diagnosing and repairing light vehicle hydraulic braking systems, including procedures for trapping, storing and disposing of brake dust and brake fluid released from hydraulic braking systems
- operating principles of light vehicle hydraulic braking systems, including:
    - levers
    - friction
    - hydraulics, including the relationship between force, pressure and area
- properties of brake fluids, including:
    - Department of Transportation (DOT) classification
    - synthetic and non-synthetic
    - compatibility of fluid types
- purpose and operation of light vehicle hydraulic braking systems and components, including:
    - front and rear split systems
    - diagonal split systems
    - master cylinders, including:
        - tandem master cylinders
        - compensating-type master cylinders
        - centre-valve master cylinders
    - drum braking system and components, including:
        - self-energising or servo effect
        - leading and trailing shoe braking systems
        - duo-servo braking systems
        - two-leading shoe braking systems
        - wheel cylinders
        - manual and self-adjustment systems of drum braking systems
    - disc braking systems and components, including:
        - types of brake discs
        - disc pads
        - self-adjustment of disc pads
        - fixed, floating and dual-piston brake callipers

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  - parking brake systems and components, including:
    - parking brake levers
    - drum parking brakes
    - disc parking brakes
    - electronic parking brake systems
  - braking system valves and switches, including:
    - pressure differential valves and switches
    - proportioning valves
    - load-sensing proportioning valves
    - drum brake check valves
  - fluid-level warning devices
  - vacuum operated brake boosting systems
- diagnostic testing procedures for light vehicle hydraulic braking systems, including procedures for:
  - checking brake pedal
  - operational tests of brake booster
  - operational tests of master cylinder
  - testing brake fluid
  - operational tests of hand brake
  - operational tests of drum and disc brakes
  - measuring and evaluating brake drums, shoes, discs and pads
- repair procedures for light vehicle hydraulic braking systems, including procedures for:
  - removing, replacing and adjusting hydraulic system components, including master cylinder, proportioning valves, switches, brake hoses and lines, disc callipers and wheel cylinders
  - removing, replacing and adjusting braking system components, including brake booster, master cylinder, hand brake lever and cables, brake shoes and drums, brake pads and brake discs
  - bleeding brakes, including anti-lock braking systems (ABS)
- post-repair testing procedures for light vehicle hydraulic braking systems, including procedures for road testing and bedding in brakes.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle hydraulic braking systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer braking system specifications
- two different light vehicles with four-wheel hydraulic disc brake systems with faults
- one light vehicle with a rear drum brake system
- diagnostic equipment for light vehicle hydraulic braking systems
- tools, equipment and materials appropriate for repairing light vehicle braking systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTB104 Diagnose complex faults in light vehicle braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in light vehicle braking systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The light vehicle braking systems include those of light vehicles and light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical - Brakes

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings.
Reading	• Interprets workplace instructions such as job cards • Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking

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SKILL	DESCRIPTION
	braking system specifications and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures braking system components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interpret units, such as amperes, ohms, and volts.
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTB004 Diagnose complex faults in light vehicle braking systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTB104 Diagnose complex faults in light vehicle braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in three different light vehicle braking systems, including one anti-lock braking system, in which the work for each must involve a different complex fault chosen from the following:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems
- develop a testing strategy to diagnose the cause of the complex fault in each of the above three light vehicle braking systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in light vehicle braking systems, including:
  - light vehicle braking system manufacturer specifications
- workplace procedures required to diagnose complex faults in light vehicle braking systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in light vehicle braking systems, including procedures for managing and controlling brake dust and brake fluid
- environmental requirements, including procedures for trapping, storing and disposing of fluids and material released from braking systems
- types of complex faults relating to light vehicle braking systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types, functions and operation of light vehicle braking systems, including mechanical, hydraulic and electronic subsystems
- testing procedures for light vehicle braking systems, including procedures for:
    - vehicle dynamic and static testing
    - abnormal noise analysis
    - component failure analysis
- types, and key features of diagnostic testing equipment required to diagnose complex faults in light vehicle braking systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - waveforms
    - vehicle continuous and non-continuous monitored systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle braking system specifications

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- three different light vehicles with complex faults in their braking systems, including a vehicle with an anti-lock braking system
- light vehicle braking system diagnostic equipment, including scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in light vehicle braking systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTD104 Diagnose and repair light vehicle steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair light vehicle steering systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The steering systems include those in light vehicles, light commercial vehicles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical - Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair light vehicle steering system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose light vehicle steering system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair light vehicle steering system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures steering system information in degrees and metric units of measurement • Measures steering system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTD004 Diagnose and repair light vehicle steering systems.

Links

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Assessment Requirements for AURLTD104 Diagnose and repair light vehicle steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in a light vehicle in:
  - a power-assisted rack and pinion steering assembly
  - a power steering pump
  - at least one of the following steering components:
    - power steering hose
    - tie-rod end
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - leaking seals or hoses
  - low power steering fluid levels
  - worn components.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair light vehicle steering systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle steering systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:

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    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing light vehicle steering systems, including procedures for working with high pressure and high temperature steering systems
- environmental requirements relating to diagnosing and repairing light vehicle steering systems
- operating principles of light vehicle steering systems, including:
    - manual steering systems
    - power steering systems
- purpose and operation of light vehicle steering systems and components, including:
    - steering wheels, including clock springs
    - steering columns
    - manual steering systems, including:
        - rack and pinion
        - steering boxes
    - hydraulic power steering systems, including:
        - integral piston
        - power assisted rack and pinion
        - electronically controlled power steering systems
    - electric steering systems, including steering angle sensors
- identification, function and basic operating principles of steering angles, including:
    - steering angles:
        - toe-in and toe-out
        - toe-out on turns
        - caster
        - camber
    - Ackermann principle of steering
    - steering axis inclination
- diagnostic testing procedures for light vehicle steering systems, including procedures for analysing:
    - operational testing
    - hydraulic steering system testing
    - electronic and load sensing steering testing
    - component wear analysis
- repair procedures for light vehicle steering systems, including procedures for removing, replacing and adjusting the systems
- post-repair testing procedures for light vehicle steering systems.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle steering systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer steering system specifications
- one light vehicle with faults in its power-assisted rack and pinion steering system
- diagnostic equipment for light vehicle steering systems
- tools, equipment and materials appropriate for diagnosing and repairing light vehicle steering systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTD105 Diagnose and repair light vehicle suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair light vehicle suspension systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The suspension systems include those in light vehicles, light commercial vehicles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical - Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair light vehicle suspension system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose light vehicle suspension system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair light vehicle suspension system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures suspension system information in degrees and metric units of measurement • Measures suspension system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTD005 Diagnose and repair light vehicle suspension systems.

Links

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Assessment Requirements for AURLTD105 Diagnose and repair light vehicle suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in:
  - a MacPherson strut suspension system, in which the work must involve removing and refitting or replacing the MacPherson strut
  - a coil spring suspension system, in which the work must involve removing and refitting or replacing the coil spring
  - at least one of the following suspension system components, in which the work must involve removing the spring component from the vehicle:
    - leaf spring suspension system
    - torsion bar suspension system
    - pneumatic suspension system
- carry out a diagnostic test in the course of the above work for at least one of the following faults:
  - worn components
  - abnormal system noise.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair light vehicle suspension systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle suspension systems, including:
  - establishing serviceability of tools and equipment

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- documentation procedures
- housekeeping procedures, including:
  - examination of tools and equipment
  - storage of equipment
  - identification, tagging and isolation of faulty equipment
  - disposal of excess materials
  - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing light vehicle suspension systems, including identifying hazards and controlling risks associated with:
  - working with stored energy in springs and torsion bars, including procedures for removing tension from suspension components
  - manual handling heavy suspension system components
- principles of light vehicle suspension systems and associated components, including:
  - rigid and independent suspensions
  - sprung and unsprung mass
  - ride and curb height
- purpose and operation of light vehicle suspension systems and components, including:
  - coil spring suspension, including:
    - types of coil springs and deflection rates
    - front coil spring suspension arrangements, including short arm and long arm suspension
    - rear coil spring suspension arrangements
  - strut or MacPherson suspension
  - leaf spring suspension
  - torsion bar suspension
  - multi-link suspension
  - hydraulic suspension
  - pneumatic suspension
  - suspension system components, including:
    - ball joint function and operation
    - stabiliser bar function and operation
    - Watts link and Panhard rod function and operation
  - independent rear suspension arrangements and operation
  - shock absorber function and operation, including:
    - gas-filled shock absorbers
    - strut or MacPherson shock absorbers
  - hub assemblies and bearing arrangements, including:
    - hubs with tapered roller bearings
    - hubs with unitised bearings

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- diagnostic testing procedures for light vehicle suspension systems, including procedures for analysing:
  - component wear
  - abnormal system noise
- repair procedures for light vehicle suspension systems, including procedures for:
  - removing and replacing:
    - ball joints
    - suspension bushes
    - shock absorbers
    - MacPherson struts
    - coil springs
    - leaf springs
    - torsion bars
  - compressing coil springs
  - replacing and adjusting bearings for hubs with:
    - tapered roller bearings
    - unitised bearings
- post-repair testing procedures for light vehicle suspension systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer suspension system specifications
- light vehicles with faults in the suspension systems specified in the performance evidence
- diagnostic equipment for light vehicle suspension systems
- tools, equipment and materials appropriate for repairing light vehicle suspension systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURLTD106 Carry out light vehicle wheel alignment operations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to carry out light vehicle wheel alignment operations. It involves identifying and confirming work requirements, preparing for the work, carrying out pre-alignment inspection, performing light vehicle wheel alignment, and completing workplace processes and documentation.

This unit applies to those who work in the automotive service and repair industry. The wheel alignment operations include those with light vehicles or light commercial vehicles. The unit does not apply to agricultural machinery, heavy commercial vehicles, mobile plant machinery or motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Mechanical - Light Vehicle Technical - Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to carry out light vehicle wheel alignment	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret light vehicle wheel alignment pre-check information 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for the job and establish serviceability according to workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
2. Carry out light vehicle wheel alignment pre-checks	2.1 Test vehicle according to workplace procedures and workplace health and safety requirements 2.2 Complete vehicle wheel alignment pre-check according to manufacturer specifications, workplace procedures, and workplace health and safety requirements 2.3 Identify and report faults according to workplace procedures
3. Carry out vehicle wheel alignment activities	3.1 Obtain and interpret light vehicle wheel alignment information 3.2 Connect wheel alignment measuring equipment to vehicle according to manufacturer specifications and workplace procedures 3.3 Carry out wheel alignment and record readings 3.4 Carry out corrective adjustments to wheel according to manufacturer specifications, workplace procedures, and workplace health and safety requirements 3.5 Re-check wheel alignment and confirm accuracy of adjustments 3.6 Record post-adjustment wheel alignment readings according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets safe operating procedures for wheel alignment equipment from workplace signs and procedures and manufacturer specifications • Interprets information from manufacturer specifications and workshop literature when seeking vehicle wheel alignment specifications and procedures.

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SKILL	DESCRIPTION
Numeracy	• Measures steering and suspension system components • Uses basic mathematical operations, including addition, subtraction and understanding angles in degrees • Calculates distances, tolerances and deviations from manufacturer specifications • Uses measurements in metric and imperial units of measurement.
Planning and organising	• Identifies and prepares tools and equipment to allow the job to be completed without time wastage • Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTD006 Carry out light vehicle wheel alignment operations.

Links

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Assessment Requirements for AURLTD106 Carry out light vehicle wheel alignment operations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- align all four wheels of:
  - one front wheel drive vehicle
  - one rear wheel drive vehicle
- while completing the above tasks, adjust all of the following steering angles:
  - camber
  - caster
  - steering axis inclination (SAI)
  - toe (toe-in and toe-out)
  - toe-out on turns.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out light vehicle wheel alignment including:
  - manufacturer specifications and procedures
  - workplace procedures
- workplace procedures required to carry out light vehicle wheel alignment including:
  - establishing serviceability of tools and equipment
  - pre and post wheel alignment procedures
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to light vehicle wheel alignment, including:
    - procedures for using air jacks
- steering geometry and wheel alignment angles, including:
    - Ackermann principle of steering
    - camber
    - caster
    - SAI
    - thrust angle
    - toe-in and toe-out
    - toe-out on turns
    - included angle
    - point of intersection
    - scrub radius
- vehicle pre-alignment inspection procedures, including:
    - analysing tyre wear
    - determining wheel run-out
    - determining vehicle height
    - checking frame alignment
- types and operation of wheel alignment systems, including:
    - laser aligners
    - visual aligners
    - camera aligners
- relationships between fault symptoms and component defects
- procedures for measuring and adjusting steering angles, including:
    - camber
    - caster
    - steering axis inclination
    - thrust angle
    - toe
    - toe-out on turns
- procedures for carrying out four-wheel alignment
- post-wheel alignment testing procedures for light vehicles including steering system reset procedures to calibrate on-board system sensors with the steering geometry.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle wheel alignments that they have carried out, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer wheel alignment specifications
- one front wheel drive light vehicle and one rear wheel drive light vehicle requiring the adjustments specified in the performance evidence
- wheel alignment equipment for light vehicles
- tools, equipment and materials appropriate for carrying out wheel alignment operations on light vehicles.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTD109 Diagnose complex faults in light vehicle steering and suspension systems

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Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in light vehicle steering and suspension systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The steering and suspension systems include those light vehicles or light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical – Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings.

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SKILL	DESCRIPTION
Reading	• Interprets workplace instructions such as job cards • Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking steering and suspension system specifications and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures steering and suspension system components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interpret units, such as amperes, ohms, and volts.
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent AURLTD009 Diagnose complex faults in light vehicle steering and suspension systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTD109 Diagnose complex faults in light vehicle steering and suspension systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in the following three systems:
  - steering system of a light vehicle
  - suspension system of a different light vehicle
  - steering or suspension system of a third light vehicle
- the above work must involve developing a testing strategy to diagnose the cause of at least two of the following types of complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in light vehicle steering and suspension systems, including:
  - light vehicle steering and suspension system manufacturer specifications
- workplace procedures required to diagnose complex faults in light vehicle steering and suspension systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS)) requirements relating to diagnosing complex faults in light vehicle steering and suspension systems, including procedures for working with:
    - stored energy in springs, air springs and torsion bars
    - high pressure and high temperature steering system fluids
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from steering and suspension systems
- types of complex faults relating to light vehicle steering and suspension systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types, and key features of light vehicle steering and suspension systems, including:
    - hydraulic power assisted steering
    - electric power assisted steering
    - active suspension
    - adaptive suspension
- testing procedures for light vehicle steering and suspension systems, including procedures for:
    - vehicle dynamic and static testing
    - abnormal noise analysis
    - component failure analysis
- types, and key features of diagnostic testing equipment required to diagnose complex faults in light vehicle steering and suspension systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - freeze frame data
    - waveforms
    - vehicle continuous and non-continuous monitored systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle steering and suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle steering and suspension specifications
- three different light vehicles with complex faults in their steering and suspension systems
- steering and suspension system diagnostic equipment
- tools, equipment and materials appropriate for diagnosing complex faults in steering and suspension systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTE102 Diagnose and repair light vehicle engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the spark ignition engines and compression ignition engines of light vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The engines include those in light vehicles or light commercial vehicle.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair engine	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose engine	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Dismantle engine	3.1 Identify tools and equipment required to dismantle engine and establish serviceability according to workplace procedures 3.2 Dismantle engine, clean and inspect components according to workplace procedures, workplace health and safety and environmental requirements 3.3 Measure and compare components against manufacturer specifications 3.4 Confirm recommendations for necessary repairs according to workplace procedures
4. Repair and re-assemble engine	4.1 Identify required information for repair activity 4.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 4.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.4 Re-assemble engine according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.5 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures engine components • Uses mathematical operations • Calculates distances, areas, volumes and tolerances • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTE002 Diagnose and repair light vehicle engines.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTE102 Diagnose and repair light vehicle engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair three different light vehicle engines
- in the course of the above work, diagnose and repair the following faults:
  - a fault in an engine cylinder head with an overhead camshaft, in which the work must involve removing the cylinder head from the engine
  - a fault in two different engines that affects one of the following components for each, in which the work must involve removing the component from the engine:
    - engine valve timing belt
    - engine valve timing chain
    - engine valve lifters
    - cylinder head valve stem seals
    - camshaft
    - camshaft bearings
    - crankshaft
    - balance shaft or its bearings
    - pistons and connecting rods
    - cylinder block sleeves
    - main bearings and big-end bearings
    - internal oil pump
- in the course of the above work, carry out a diagnostic test for at least one of the following faults:
  - leaking cylinders
  - low oil pressure
  - abnormal engine noises.

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Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair light vehicle engines, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle engines, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing light vehicle engines, including procedures for lifting and supporting light vehicle engines
- environmental requirements relating to diagnosing and repairing light vehicle engines, including procedures for trapping, storing and disposing of fluids released from engines
- operating principles of light vehicle engines, including:
  - combustion, including:
    - air-fuel ratios and combustion cycles
    - direct injection
    - detonation
  - engine design, including:
    - swept volume and engine volume
    - compression ratio
    - engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
    - torque and horsepower, including brake horsepower
- diagnostic testing procedures for light vehicle engines, including:
  - wet and dry compression tests
  - cylinder leakage tests
  - oil pressure tests
  - checking sources of fluid leaks
  - exhaust smoke diagnosis
  - checking abnormal engine noises
- dismantling procedures for light vehicle engines, including procedures for:
  - measuring clearances and tolerances

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  - inspecting components
- repair procedures for light vehicle engines, including procedures for removing, replacing and adjusting them
- assembly procedures for light vehicle engines, including procedures for removing, replacing and adjusting them
- post-repair testing procedures for light vehicle engines, including:
  - checking oil pressure
  - road testing under load
  - checking for fluid leaks.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- three different light vehicle engines with faults specified in the performance evidence
- diagnostic equipment for light vehicle engines
- tools, equipment and materials appropriate for repairing light vehicle engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTE104 Diagnose complex faults in light vehicle petrol engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in light vehicle petrol engines and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The petrol engines include those of light vehicles or light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical – Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings.
Reading	• Interprets workplace instructions such as job cards • Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking

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SKILL	DESCRIPTION
	petrol engine system specifications and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures petrol engine system components and uses mathematical operations to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interprets units, such as amperes, ohms, and volts.
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment • Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTE004 Diagnose complex faults in light vehicle petrol engines.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTE104 Diagnose complex faults in light vehicle petrol engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in three different light vehicle petrol engines, in which the work for at least two of the engines must involve a different complex fault chosen from the following:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems
- develop a testing strategy to diagnose the cause of the complex fault in each of the three petrol engines above.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in light vehicle petrol engines, including:
  - light vehicle petrol engine manufacturer specifications
- workplace procedures required to diagnose complex faults in light vehicle petrol engines, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in light vehicle petrol engines, including procedures for:
    - working with hot engine components and rotating engine components
    - controlling hazards associated with hazardous substances, including engine oil and coolants
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from petrol engines
- types of complex faults relating to light vehicle petrol engines, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types, function and operation of light vehicle petrol engines, including:
    - intake, exhaust, lubrication, cooling and engine mounting systems and components
    - valve timing and variable valve timing
- testing procedures for light vehicle petrol engines, including:
    - abnormal noise analysis
    - compression testing
    - cylinder leak-down testing
    - oil pressure testing
    - component failure analysis
- types, functions, operation and limitations of diagnostic testing equipment required to diagnose complex faults in light vehicle petrol engines
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - waveforms.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle petrol engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle petrol engine specifications
- three different light vehicles with complex faults in their petrol engines
- engine diagnostic equipment, including:
  - compression gauge
  - vacuum gauge
  - cylinder leak-down gauge
  - oil pressure gauge
- tools, equipment and materials appropriate for diagnosing complex faults in light vehicle petrol engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTE105 Diagnose complex faults in light vehicle diesel engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in light vehicle diesel engines and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The diesel engines include those of light vehicles or light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical – Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings.
Reading	• Interprets workplace instructions such as job cards • Identifies, organises and interprets technical information

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SKILL	DESCRIPTION
	from manufacturer and workshop literature when seeking diesel engine system specifications and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures diesel engine system components and uses mathematical operations to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interpret units, such as amperes, ohms, and volts.
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment • Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTE005 Diagnose complex faults in light vehicle diesel engines.

Links

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Assessment Requirements for AURLTE105 Diagnose complex faults in light vehicle diesel engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in three different light vehicle diesel engines, in which the work for at least two of the engines must involve one of the following types of complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems
- develop a testing strategy to diagnose the cause of the complex fault in each of the three engines above.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in light vehicle diesel engines, including:
  - light vehicle diesel engine manufacturer specifications
- workplace procedures required to diagnose complex faults in light vehicle diesel engines, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in light vehicle diesel engines, including procedures for working with:
    - hot engine components
    - rotating engine components
    - engine oil and coolants
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from diesel engines
- types of complex faults relating to light vehicle diesel engines, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types and key features of light vehicle diesel engines, including:
    - intake, exhaust, lubrication, cooling and engine mounting systems and components
    - turbochargers
    - valve timing
- testing procedures for light vehicle diesel engines, including:
    - abnormal noise analysis
    - compression testing
    - cylinder leak-down testing
    - oil pressure testing
    - component failure analysis
- types, key features and limitations of diagnostic testing equipment required to diagnose complex faults in light vehicle diesel engines
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - freeze frame data
    - waveforms
    - vehicle continuous and non-continuous monitored systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle diesel engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle diesel engine specifications
- three different light vehicles with complex faults in their diesel engines
- light vehicle diesel engine diagnostic equipment, including:
  - compression gauge
  - vacuum gauge
  - cylinder leak-down gauge
  - oil pressure gauge
- tools, equipment and materials appropriate for diagnosing complex faults in light vehicle diesel engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTF101 Diagnose and repair light vehicle mechanical fuel injection systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the mechanical fuel injection systems of light vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The mechanical fuel injection systems include those in light vehicles, light commercial vehicles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical – Fuel Systems

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair light vehicle mechanical fuel injection system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and

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ELEMENTS	PERFORMANCE CRITERIA
	implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose light vehicle mechanical fuel injection system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair light vehicle mechanical fuel injection system	3.1 Identify required information for repair activity 3.2 Identify required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures mechanical fuel injection system components • Uses mathematical operations • Calculates distances and tolerances • Calculates deviations from manufacturer specifications • Interprets ratios and units, such as parts per million (PPM) from exhaust gas analysers.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTF001 Diagnose and repair light vehicle mechanical fuel injection systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTF101 Diagnose and repair light vehicle mechanical fuel injection systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in three mechanical fuel injection system components, including:
  - at least one fuel distributor
  - at least two of the following:
    - fuel injector
    - fuel pressure regulator
    - fuel pump and filter
    - fuel accumulator
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - low system pressure
  - leaking injectors
  - low fuel pump volume.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair light vehicle mechanical fuel injection systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle mechanical fuel injection systems, including:
  - establishing serviceability of tools and equipment

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    - documentation procedures
    - housekeeping procedures, including:
        - examination of tools and equipment
        - storage of equipment
        - identification, tagging and isolation of faulty equipment
        - disposal of excess materials
        - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing light vehicle mechanical fuel injection systems, including procedures for working with high pressure petrol fuel systems
- environmental requirements relating to diagnosing and repairing light vehicle mechanical fuel injection systems, including procedures for trapping, storing and disposing of fluids released from fuel system
- operating principles of light vehicle mechanical fuel injection systems, including carburation
- purpose and operation of light vehicle mechanical fuel injection systems and components, including:
    - fuel supply, including:
        - high and low pressure system
        - electric fuel pump
        - fuel accumulator
    - fuel metering, including:
        - air-flow sensor
        - fuel distributor
        - differential pressure valves
        - fuel injectors
    - cold-start enrichment and warm-up enrichment, including:
        - cold-start valve
        - thermo-time switch
        - warm-up regulator
        - auxiliary air device
    - full load enrichment
- diagnostic testing procedures for light vehicle mechanical fuel injection systems, including procedures for:
    - cold-start enrichment inspection
    - testing injectors, including:
        - opening pressure
        - leakage integrity
        - spray shape
        - chatter
    - testing system pressure, including:

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    - primary system pressure
    - control pressure
  - analysing exhaust gas, including cold and hot engine exhaust gas analysis.
- repair procedures for light vehicle mechanical fuel injection systems, including procedures for removing, replacing and injection pump timing mechanical fuel injection systems
- post-repair testing procedures for light vehicle mechanical fuel injection systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mechanical fuel injection systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mechanical fuel injection system specifications
- vehicles with faults in the mechanical fuel injection system components specified in the performance evidence
- diagnostic equipment for mechanical fuel injection systems, including exhaust gas analyser
- tools, equipment and materials appropriate for repairing mechanical fuel injection systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTF102 Diagnose and repair light vehicle diesel fuel injection systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the mechanically controlled diesel fuel injection systems of light vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The diesel fuel injection systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical – Fuel Systems

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair light vehicle diesel fuel injection system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and

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ELEMENTS	PERFORMANCE CRITERIA
	implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose light vehicle diesel fuel injection system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair light vehicle diesel fuel injection system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures diesel fuel injection system components • Uses mathematical operations • Calculates distances and tolerances • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTF002 Diagnose and repair light vehicle diesel fuel injection systems.

Links

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Assessment Requirements for AURLTF102 Diagnose and repair light vehicle diesel fuel injection systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair two different light vehicles with diesel engines, over the course of which the work must involve:
  - removing, refitting and timing a diesel high pressure pump
  - removing, refitting and testing injectors
  - bleeding a diesel fuel injection system
  - removing and refitting a low pressure fuel pump
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - low fuel pump pressure
  - leaking injectors.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair light vehicle diesel fuel injection systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle diesel fuel injection systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing light vehicle diesel fuel injection systems, including procedures for working with high pressure fuel systems
- environmental requirements relating to diagnosing and repairing light vehicle diesel fuel injection systems, including procedures for trapping, storing and disposing of fluids released from fuel system
- operating principles of light vehicle diesel fuel injection systems, including:
    - phases of combustion
    - composition of diesel fuel, including cetane and sulphur content
- purpose and operation of light vehicle diesel fuel injection systems and components, including:
    - high pressure injection pump systems
    - distributor pumps, including axial and radial types
    - in-line injection pump systems
    - mechanically controlled unit type systems
- diagnostic testing procedures for light vehicle diesel fuel injection systems, including procedures for:
    - assessing exhaust smoke
    - testing low fuel pressure pump
    - testing injector opening pressure and spray pattern
    - testing injector for back leakage and nozzle leakage
    - assessing and testing air induction system
    - assessing and testing engine performance
- repair procedures for light vehicle diesel fuel injection systems, including procedures for:
    - dismantling, cleaning, adjusting and reassembling conventional and two-spring injectors
    - removing, installing and timing high pressure injection pumps
    - bleeding fuel systems
- post-repair testing procedures for light vehicle diesel fuel injection systems, including assessing:
    - system leakage
    - engine performance.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle diesel fuel injection systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle diesel fuel injection specifications
- two different light vehicles with diesel engines with faults
- diagnostic equipment for diesel fuel injection systems
- tools, equipment and materials appropriate for repairing diesel fuel injection systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTJ102 Remove, inspect, repair and refit light vehicle tyres and tubes

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove, inspect, repair and refit light vehicle tyres and tubes from wheels. It involves identifying and confirming work requirements, preparing for the task, removing, inspecting, repairing and refitting the tyres and tubes, and completing workplace processes and documentation.

This unit applies to those who work within the automotive service and repair industry. The tyres and tubes include those of light vehicles, motorcycles or outdoor power equipment. This unit does not apply to agricultural machinery, heavy commercial vehicles, marine vessels or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical - Light Vehicle Technical - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove, inspect, repair and refit light vehicle tyres and tubes	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for tyre and tube removal, inspection, repair activity 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment and materials required for the job

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Remove and inspect tyres, tubes and wheels	2.1 Remove tyres and tubes from wheels according to manufacturer and workplace procedures, workplace health and safety and environmental requirements 2.2 Inspect tyres, tubes and wheels according to manufacturer specifications and workplace procedures 2.3 Report inspection findings and make recommendations for necessary repairs according to workplace procedures
3. Repair and refit tyres and tubes	3.1 Identify required information for repair activity 3.2 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.3 Mount tyre to wheel according to manufacturer and workplace procedures, without causing damage to components or systems 3.4 Check assembled wheel and tyre for correct assembly and serviceability according to manufacturer specifications and workplace procedures, and rectify any issues identified 3.5 Inflate tyre according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Reads and interprets information from manufacturer specifications, workplace procedures and documentation when seeking tyre and tube repair procedures and specifications.

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions.
Numeracy	• Interprets numerical information when repairing tyres and tubes • Understands metric and imperial units of measurement.
Technology	• Operates specialised tools and equipment • Operates specialised repair equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTJ002 Remove, inspect, repair and refit light vehicle tyres and tubes.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTJ102 Remove, inspect, repair and refit light vehicle tyres and tubes

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove, inspect, repair and refit light vehicle tyres to both steel and alloy wheels, including repairs or replacements to:
  - two tubes
  - two radial ply tyres.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove, inspect, repair and re-fit light vehicle tyres and tubes including:
  - manufacturer specifications and procedures
  - workplace procedures
- workplace procedures required to remove, inspect, repair and re-fit light vehicle tyres and tubes including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to light vehicle tyres and tubes, including procedures for:

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  - deflating and inflating tyres
  - manually handling light vehicle wheel assemblies
- environmental requirements relating to light vehicle tyres and tubes, including procedures for:
  - trapping and disposing of tyre material produced during repair
- procedures for removing, inspecting, repairing and refitting tyres and tubes, including:
  - split lock rings
  - one piece wheels
- types and uses of tyres, tubes and wheels, including:
  - radial and bias or diagonal ply tyres
  - tubed and tubeless tyres
  - steel and alloy wheels
  - run flat tyres
- types and operation of tyre changing equipment and tyre and tube repair equipment
- post-fitting procedures and checks of light vehicle tyres and tubes.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle tyres and tubes that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer tyre and tube repair procedures and specifications
- light vehicle tyres, tubes and wheels specified in the performance evidence
- tools, equipment and materials appropriate for removing, inspecting, repairing and refitting light vehicle tyres and tubes, including:
  - tyre and tube repair tools and equipment
  - tyre and tube repair consumables
  - tyre changing tools and equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURLTJ104 Provide advice on the effects of light vehicle wheel and tyre combinations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to provide advice to customers regarding specific non-standard wheel and tyre combinations that could affect the ride and handling characteristics of their vehicle. It involves confirming customer needs, analysing technical needs and options, providing advice on compliance with Australian Design Rules (ADR), recommending best options for wheel and tyre combinations, and completing workplace processes and documentation.

This unit applies to those who work in the automotive service and repair industry. The wheel and tyre combinations include those for light vehicles, including four wheel drive (4WD) vehicles, light commercial vehicles or motorsport vehicles. This unit does not apply to agricultural machinery, heavy commercial vehicles, marine vessels, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical - Light Vehicle Technical - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm customer requirement	1.1 Discuss wheel and tyre combinations with customer including alternative wheel and tyre combinations 1.2 Clarify and confirm specifications of proposed wheel and tyre combinations with customer

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ELEMENTS	PERFORMANCE CRITERIA
2. Locate and confirm data to inform technical opinion	2.1 Consult technical product personnel from wheel and tyre manufacturers 2.2 Confirm and report compliance of wheel and tyre combinations with Australian Design Rules according to workplace procedures 2.3 Consult colleagues with technical knowledge and experience according to workplace procedures
3. Recommend wheel and tyre options that meet customer requirements	3.1 Discuss effects of wheel and tyre combinations on vehicle performance, handling and comfort with customer 3.2 Advise customer on suitability of wheel and tyre combination 3.3 Develop options that meet customer needs according to workplace procedures 3.4 Discuss implications of non-compliant wheel and tyre combination according to Australian Design Rules with customer 3.5 Complete workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Identifies ADR regulations
Reading	• Interprets ADR regulations • Interprets manufacturers' wheel and tyre technical specifications
Oral communication	• Clarifies and confirms information and instructions • Determines customer requirements through open-ended questioning, active listening, paraphrasing and summarising • Discusses compliance issues with colleagues and negotiate solutions • Presents technical information to customers using relevant language and clarifying information as required
Numeracy	• Interprets numerical information in wheel and tyre specifications

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SKILL	DESCRIPTION
	• Interprets metric and imperial units of measurement
Problem solving	• Determines suitable or alternative wheel and tyre combinations

Unit Mapping Information

Supersedes and is equivalent to AURLTJ004 Provide advice on the effects of wheel and tyre combinations.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTJ104 Provide advice on the effects of light vehicle wheel and tyre combinations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- provide advice to three different customers on the effects of different wheel and tyre combinations on their vehicles' ride and handling characteristics.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to provide advice on wheel and tyre combinations including:
  - information provided by customers and supervisors
  - Australian Design Rules (ADRs) relating to wheels and tyres
  - legislation concerning ADR compliance.
- wheel and tyre combinations, including:
  - wheel rim sizes
  - wheel material
  - wheel diameters
  - tyre sizes
  - tyre compounds
  - tyre tread designs.
- principles of wheel and tyre technology, including:
  - directional tyres
  - wheel offsets
  - wheel track
  - tyre to road contact
- effects of wheel and tyre combinations on vehicle comfort, handling and safety.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the wheel and tyre advice that they have provided, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- three different customers requiring advice on wheel and tyre combinations
- manufacturer wheel and tyre specifications
- ADRs relating to wheel and tyre combinations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTJ113 Remove, inspect and refit light vehicle wheel and tyre assemblies

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove, inspect and refit wheel and tyre assemblies of light vehicles. It involves identifying and confirming work requirements, preparing for the task, removing, inspecting and refitting wheel and tyre assemblies, and completing workplace processes and documentation.

This unit applies to those who work in the automotive service and repair industry. The wheel and tyre assemblies include those of light vehicles, light commercial vehicles or trailers. The work does not involve removing the tyre from the wheel.

This unit does not apply to motorcycle or heavy vehicle wheel assemblies.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical - Light Vehicle Technical - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove wheel and tyre assembly	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for wheel and tyre removal, inspection and re-fitting activity 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment and materials required for the job

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Remove and inspect wheel and tyre assembly	2.1 Remove wheel and tyre assembly according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 2.2 Inspect wheel and tyre assembly, mounting points and fittings according to manufacturer specifications and workplace procedures 2.3 Report inspection findings and make recommendations for necessary repairs according to workplace procedures
3. Refit wheel and tyre assembly	3.1 Identify required information for refitting activity 3.2 Re-fit and adjust wheel and tyre assembly according to manufacturer specifications, workplace procedures and workplace health and safety requirements 3.3 Complete tightening sequence and torque settings according to manufacturer specifications and workplace procedures 3.4 Check wheel assembly for correct assembly and run-out according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets workplace instructions such as job cards • Interprets information from manufacturer and workshop literature when seeking wheel and tyre specifications, including tightening procedures
Oral communication	• Clarifies instructions

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SKILL	DESCRIPTION

Numeracy	• Interprets numerical information in:
	  • manufacturer and component supplier specifications
	  • tyres and wheels
	  • workplace instructions
	  • tyre inflation gauges
	• Interprets numerical divisions in metric and imperial units of measurement

Technology	• Operates specialised tools and equipment

Unit Mapping Information

Supersedes and is equivalent to AURLTJ013 Remove, inspect, and refit light vehicle wheel and tyre assemblies.

Links

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Assessment Requirements for AURLTJ113 Remove, inspect and refit light vehicle wheel and tyre assemblies

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove, inspect and refit three different light vehicle wheel and tyre assemblies
- in the course of the above work, remove, inspect and refit at least two of the following wheel types:
  - one steel wheel assembly
  - one alloy wheel assembly
  - one four wheel drive vehicle wheel assembly
  - one split or multi-piece wheel assembly.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove, inspect and re-fit light vehicle wheel and tyre assemblies including:
  - manufacturer specifications and procedures
  - workplace procedures
- workplace procedures required to remove, inspect and re-fit light vehicle wheel and tyre assemblies including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to light vehicle wheel and tyre assemblies, including procedures for:
    - lifting and supporting vehicles
    - using wheel assembly removal tools
    - manually handling wheel assemblies
    - working with high air pressure
    - working with split and multi-piece wheels
- types and applications of wheel assemblies, including:
    - stamped or pressed steel wheels
    - alloy wheels
    - wheel studs and nuts
    - run flat tyres
- procedures for pre-removal inspections of wheel assemblies, including split and multi-piece wheels
- procedures for removing, inspecting and refitting light vehicle wheel and tyre assemblies, including wheel nut tensioning procedures
- post-fitting procedures and checks of light vehicle wheel assemblies, including:
    - wheel assembly run-out
    - correct operation of vehicle systems affected by the removal and refitting of wheel assemblies
    - rechecking tightness of attachment devices.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle wheel and tyre assemblies that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer wheel and tyre specifications
- three different light vehicles with the wheel and tyre assemblies specified in the performance evidence
- tools, equipment and materials appropriate for removing, inspecting and refitting light vehicle wheel and tyre assemblies.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTQ101 Diagnose and repair light vehicle final drive assemblies

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the final drive assemblies of light vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The final drive assemblies include those in light vehicles or light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical – Driveline and Final Drives

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair light vehicle final drive assembly	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose light vehicle final drive assembly	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair light vehicle final drive assembly	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures final drive assembly components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Calculates gear ratios and torque reduction.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTQ001 Diagnose and repair light vehicle final drive assemblies.

Links

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Assessment Requirements for AURLTQ101 Diagnose and repair light vehicle final drive assemblies

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in both of the following light vehicle final drive assemblies:
  - removable carrier housing (banjo) type
  - integral carrier housing type
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - abnormal system noise
  - worn components
  - contaminated differential fluid.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair light vehicle final drive assemblies, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle final drive assemblies, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing light vehicle final drive assemblies, including procedures for working with hazardous oils
- environmental requirements relating to diagnosing and repairing light vehicle final drive assemblies, including procedures for trapping, storing and disposing of oils released from final drive assemblies
- operating principles of light vehicle final drive assemblies and associated components, including:
    - final drive gears, including:
        - gear types
        - gear ratios and torque reduction and multiplication
    - differential function
- purpose and operation of light vehicle final drive assemblies and components, including:
    - removable carrier housing (banjo) type final drives
    - integral carrier housing type final drives
    - transaxle final drives
    - differentials, including limited slip differentials
    - axle shafts for rigid axles, including:
        - semi floating live axles
        - three quarter floating live axles
        - fully floating live axles
- diagnostic testing procedures for light vehicle final drive assemblies, including procedures for:
    - road testing procedures, including:
        - final drive assembly noise diagnostic
        - wheel bearing noise diagnostic
    - pre-dismantling inspection procedures
- repair procedures for light vehicle final drive assemblies, including procedures for:
    - dismantling final drive assemblies
    - inspecting final drive assemblies
    - reassembling and adjusting pinion depth, pinion bearing preload, crown wheel and pinion backlash, side bearing preload and crown wheel and pinion tooth contact
    - repairing wheel bearings of rear wheel drive light vehicles
- post-repair testing procedures for light vehicle final drive assemblies.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle final drive assemblies that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle final drive assembly specifications
- two different light vehicles:
  - one with faults in its removable carrier housing (banjo) type final drive assembly
  - one with faults in its integral carrier housing type final drive assembly
- diagnostic equipment for light vehicle final drive assemblies
- tools, equipment and materials appropriate for light vehicle final drive assemblies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTQ102 Diagnose and repair light vehicle drive shafts

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the drive shafts of light vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The drive shafts include those in light vehicles or light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical – Driveline and Final Drives

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair light vehicle drive shaft	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose light vehicle drive shaft	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair light vehicle drive shaft	3.1 Identify required information for repair activity 3.2 Identify required tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions

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SKILL	DESCRIPTION
	• Obtains information from customers and supervisors.
Numeracy	• Measures drive shaft components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Measures angles in degrees.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTQ012 Diagnose and repair light vehicle drive shafts.

Links

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Assessment Requirements for AURLTQ102 Diagnose and repair light vehicle drive shafts

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair drive shafts in two different light vehicles, in which the work must involve:
  - one rear wheel drive vehicle with drive shaft with universal joints, including removing the drive shaft from vehicle, replacing one universal joint, and refitting the drive shaft
  - one front wheel drive vehicle with constant velocity joint drive shaft, including removing the drive shaft from the vehicle and refitting it
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - abnormal drive shaft noise
  - vibrations.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair light vehicle drive shafts, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle drive shafts, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing light vehicle drive shafts, including procedures for working with hazardous oils
- environmental requirements relating to diagnosing and repairing light vehicle drive shafts, including procedures for trapping, storing and disposing of oils released from drive shafts
- operating principles of light vehicle drive shafts and associated components, including:
    - torque reaction of rear axle housings
    - torque steer
- purpose and operation of light vehicle drive shafts and components, including:
    - propeller shafts, including:
        - single and multi-piece shafts
        - universal joints, including cross and yoke joints, double cardan joints and Lobro joints
        - velocity fluctuation of universal joints
        - shaft alignment
    - constant velocity joints, including:
    - Birfield joints
    - double offset joints
    - tripod joints
- diagnostic testing procedures for light vehicle drive shafts, including road testing procedures for:
    - drive shaft noise diagnostic
    - vibration
- repair procedures for light vehicle drive shafts, including procedures for:
    - dismantling drive shafts
    - inspecting drive shafts
    - reassembling and aligning components
- post-repair testing procedures for light vehicle drive shafts.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle drive shafts that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle drive shaft specifications
- light vehicle with front engine and rear wheel drive
- light vehicle with front wheel drive constant velocity joint drive shaft
- diagnostic equipment for light vehicle drive shafts
- tools, equipment and materials tools appropriate for repairing light vehicle drive shafts.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTX101 Diagnose and repair light vehicle manual transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the manual transmissions of light vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The manual transmissions include those in light vehicles or light commercial vehicles. This unit does not apply to agricultural machinery, heavy commercial vehicles, marine vessels, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical - Light Vehicle Technical - Transmission

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair light vehicle manual transmission	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and

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ELEMENTS	PERFORMANCE CRITERIA
	implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose manual transmission	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results. 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair manual transmission	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Numeracy	• Measures manual transmission components and uses mathematical operations

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SKILL	DESCRIPTION
	• Calculates deviations and tolerances from manufacturer specifications • Calculates gear ratios and torque reduction and multiplication.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Interprets information from manufacturer and workshop literature when seeking manual transmission specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTX001 Diagnose and repair light vehicle manual transmissions.

Links

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Assessment Requirements for AURLTX101 Diagnose and repair light vehicle manual transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair faults in two different light vehicle manual transmissions, including faults in a different component from among the following for each vehicle:
  - input or primary shaft gear or bearing
  - secondary shaft or main shaft gear or bearing
  - synchroniser assembly
  - shift rail, shift fork, interlock and detent mechanisms
  - counter shaft gear or bearing
- remove, refit or replace one manual transmission in a light vehicle
- carry out a diagnostic test in the course of the above work for at least one of the following faults:
  - abnormal or irregular noises
  - faulty shifts
  - mechanical malfunctions.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair light vehicle manual transmissions, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle manual transmissions, including:
  - establishing serviceability of tools and equipment

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    - documentation and diagnosis reporting procedures, including:
        - recommendations for required repairs or adjustments
    - housekeeping procedures, including:
        - examination of tools and equipment
        - storage of equipment
        - identification, tagging and isolation of faulty equipment
        - disposal of excess materials
        - recycling procedures
- work health and safety (WHS) requirements relating to diagnosing and repairing light vehicle manual transmissions, including procedures for lifting, supporting and manual handling light vehicle manual transmissions
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmissions
- operating principles light vehicle manual transmissions, including:
    - gear types
    - gear ratios and torque reduction and multiplication
    - simple gear trains
    - compound gear trains
    - lubricant types
- application, purpose and operation of light vehicle manual transmissions and components, including:
    - power flows, including:
        - longitudinal manual transmissions
        - transaxles
        - transfer cases
    - synchromesh operation
    - gearshift mechanisms
    - transfer cases, including:
        - part-time four wheel drives
        - full-time four wheel drives
        - all-wheel drives
- diagnostic testing procedures for light vehicle manual transmissions, including:
    - abnormal noise diagnosis
    - shift diagnosis
- repair procedures for light vehicle manual transmissions, including procedures for removing, replacing and adjusting them
- post-repair testing procedures for light vehicle manual transmissions.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle manual transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle manual transmission specifications
- two different light vehicles with faults in the manual transmission components specified in the performance evidence
- diagnostic equipment for light vehicle manual transmissions
- tools, equipment and materials appropriate for repairing light vehicle manual transmissions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTX102 Diagnose and repair light vehicle automatic transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the automatic transmissions of light vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The automatic transmissions include those in light vehicles or light commercial vehicles. This unit does not apply to agricultural machinery, heavy commercial vehicles, marine vessels, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical - Light Vehicle Technical - Transmission

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair light vehicle automatic transmission	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret diagnostic information 1.3 Analyse diagnostic options and source testing strategy, selecting those required for the circumstances 1.4 Identify hazards associated with the work and manage risks 1.5 Select and check diagnostic tools and equipment required for testing strategy for serviceability

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ELEMENTS	PERFORMANCE CRITERIA
2. Diagnose automatic transmission	2.1 Perform diagnostic tests set out in testing strategy according to workplace procedures and safety requirements 2.2 Identify faults from diagnostic test results and determine causes of faults 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for required repairs according to workplace procedures
3. Repair automatic transmission	3.1 Source and interpret repair information 3.2 Analyse repair options and select those required for the circumstances 3.3 Select and check repair tools, equipment and materials 3.4 Carry out repairs and component replacements and adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or system 3.5 Carry out post-repair testing according to workplace procedures to confirm fault rectification, and rectify any further problems detected as having been introduced during the repair process
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Numeracy	• Measures automatic transmission components and uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications

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SKILL	DESCRIPTION
	• Calculates gear ratios and torque reduction and multiplication.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Interprets information from manufacturer and workshop literature when seeking automatic transmission specifications and procedures • Interprets automatic transmission hydraulic and electrical circuit diagrams.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTX002 Diagnose and repair light vehicle automatic transmissions.

Links

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Assessment Requirements for AURLTX102 Diagnose and repair light vehicle automatic transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in two different light vehicles with different automatic transmissions, in which the fault in each must involve a different component from the following:
  - torque converter
  - transmission oil pump
  - front pump seal
  - valve body
  - shift or pressure solenoid
  - clutch pack
  - brake band
  - brake band servo
  - one-way clutch
  - planetary gear set
  - continuously variable transmission (CVT) belt or pulley
  - internal bearings or thrust washers
- in course of the above, remove, refit or replace one of the light vehicle automatic transmissions
- carry out a diagnostic test in the course of the above work for at least one of the following faults:
  - abnormal or irregular noises
  - leaking fluid pressure
  - damaged solenoids, connectors or wiring.

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Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair light vehicle automatic transmissions, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle automatic transmissions, including:
  - establishing serviceability of tools and equipment
  - documentation and diagnosis reporting procedures, including:
    - recommendations for required repairs or adjustments
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to diagnosing and repairing light vehicle automatic transmissions, including procedures for lifting, supporting and manual handling light vehicle automatic transmissions
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from light vehicle automatic transmissions
- operating principles of light vehicle automatic transmissions and associated components, including:
  - fluid couplings
  - planetary gears, including:
    - single planetary gear operation
    - types of compound planetary gears, including Ravigneaux and Simpson planetary gear sets
    - gear ratios and torque reduction and multiplication
    - lubricant types and properties
- application, and key features of light vehicle automatic transmissions and components, including:
  - torque converters, including:
    - impeller, stator, one-way clutch and turbine operation
    - lock-up torque converters
  - automatic transmission mechanical components, including brake bands, clutch packs, one-way clutches, and compound planetary gear sets
  - power flows, including:
    - longitudinal automatic transmissions

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    - automatic transaxles
  - automatic transmission hydraulic components and hydraulic control components, including:
    - oil pumps
    - hydraulic valves, including pressure regulating valves, manual valves, shift valves, governor valves and throttle pressure valves
  - automatic transmission electronic components, including:
    - electronic control module
    - input sensors, including vehicle speed sensor, throttle position sensor, mass air flow (MAF) sensor, manifold absolute pressure (MAP) sensor, transmission range sensor, engine speed sensor and temperature sensor
    - electronic control module outputs, including indicator lamps, shift solenoids, pressure control solenoids and torque converter clutch solenoids
  - continuously variable transmissions, including operating principles of belts and pulleys
- diagnostic testing procedures for light vehicle automatic transmissions, including procedures for:
  - stall tests
  - pressure test
  - using scan tools when testing
- repair procedures for light vehicle automatic transmissions, including procedures for removing, replacing and adjusting them
- post-repair testing procedures for light vehicle automatic transmissions.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle automatic transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle automatic transmission specifications
- two different light vehicles with faults in the automatic transmission components specified in the performance evidence
- diagnostic equipment for light vehicle automatic transmissions
- tools, equipment and materials appropriate for repairing light vehicle automatic transmissions.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTX103 Diagnose and repair light vehicle clutch systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the clutch systems of light vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The clutch systems include those in light vehicles or light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical – Transmissions

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair light vehicle clutch system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose light vehicle clutch system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair light vehicle clutch system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions

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SKILL	DESCRIPTION
	• Obtains information from customers and supervisors.
Numeracy	• Measures clutch system components • Uses mathematical operations • Calculates distances, areas and tolerances • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTX013 Diagnose and repair light vehicle clutch systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTX103 Diagnose and repair light vehicle clutch systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair faults in the clutch system of a light vehicle, in which the work must involve:
  - removing and refitting a light vehicle manual transmission
  - removing, refitting or replacing each of the following components:
    - a light vehicle flywheel
    - clutch friction disc
    - clutch pressure plate assembly
    - release bearing
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - misadjusted cables or parts
  - worn or malfunctioning components
  - oil leakage or contamination.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair light vehicle clutch systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle clutch systems, including:
  - establishing serviceability of tools and equipment

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  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing light vehicle clutch systems, including procedures for:
  - lifting and supporting light vehicle manual transmissions
  - handling and controlling clutch dust and clutch fluid
- environmental requirements relating to diagnosing and repairing light vehicle clutch systems, including procedures for trapping, storing and disposing of brake dust and brake fluids released from clutch systems
- operating principles of light vehicle clutch systems and associated components, including coefficient of friction
- purpose and operation of light vehicle clutch systems and components, including:
  - wet and dry single and multi-plate clutch
  - dual mass flywheels
  - dampening systems
  - cable operated clutch
  - hydraulically operated clutch
- diagnostic testing procedures for light vehicle clutch systems, including road testing procedures
- repair procedures for light vehicle clutch systems, including procedures for removing, replacing and adjusting them
- post-repair testing procedures for light vehicle clutch systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle clutch systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- manufacturer light vehicle clutch system specifications
- light vehicle with manual transmission and with clutch system faults
- diagnostic equipment for light vehicle clutch systems
- tools, equipment and materials appropriate for repairing light vehicle clutch systems, including:
  - transmission lifting equipment
  - clutch aligning tool.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURLTX104 Diagnose complex faults in light vehicle automatic transmission and driveline systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in light vehicle automatic transmission and driveline systems, including drive shafts and final drives, and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, choosing the diagnostic procedure and tools, applying the diagnostic procedure, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

This unit applies to those in the automotive service and repair industry. The transmission and driveline systems include those of light vehicles or light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical - Light Vehicle Technical - Transmission

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Determine nature and objective of diagnostic requirements from workplace instructions 1.2 Confirm existence of fault in light vehicle automatic transmission or driveline system from direct or indirect evidence

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ELEMENTS	PERFORMANCE CRITERIA
	1.3 Identify hazards associated with the work and manage risks according to workplace procedures, and safety and environmental requirements
2. Prepare to diagnose complex faults	2.1 Access and interpret manufacturer specifications and other technical information for automatic transmission or driveline system 2.2 Identify diagnostic procedures and options 2.3 Identify and select diagnostic method sequence, tests and testing processes from the range of available options 2.4 Obtain and prepare testing equipment according to manufacturer specifications and workplace procedures 2.5 Identify, select and prepare tools, equipment and materials required to support the diagnostic process for use
3. Apply diagnostic procedures	3.1 Follow selected diagnostic process and carry out testing according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.2 Verify diagnostic findings, as required, by using alternative or optional process according to manufacturer specifications and workplace procedures 3.3 Draw conclusions from findings and document according to workplace procedures 3.4 Provide conclusions to required personnel or customer to confirm further action to be taken
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Applies diagnostic skills to different vehicles.
Numeracy	• Measures transmission and driveline system components and uses basic mathematical operations, including addition and

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SKILL	DESCRIPTION
	subtraction • Calculates deviations and tolerances from manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking light vehicle automatic transmission and driveline system specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment • Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTX004 Diagnose complex faults in light vehicle automatic transmission and driveline systems.

Links

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Assessment Requirements for AURLTX104 Diagnose complex faults in light vehicle automatic transmission and driveline systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in each of the following:
  - automatic transmission of a light vehicle
  - driveline system of a different light vehicle
  - electronically controlled automatic transmission or driveline system of a third light vehicle
- the above diagnosis must involve at least two of the following types of complex faults, each in a different vehicle:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in light vehicle automatic transmission and driveline systems, including:
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose complex faults in light vehicle automatic transmission and driveline systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures including:
    - recommendations for necessary repairs

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  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to diagnosing complex faults in light vehicle automatic transmission and driveline systems, including procedures for lifting, supporting and manually handling light vehicle automatic transmission and driveline systems
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmission and driveline systems
- types of complex faults relating to light vehicle automatic transmission and driveline systems, including:
  - intermittent
  - multi-system
  - introduced as a result of system repair
  - indirect, caused by the influence of external systems
- types, function and operation of light vehicle automatic transmission and driveline systems, including:
  - electronically controlled automatic transmissions
  - continuously variable transmissions (CVTs)
  - constant velocity joints
  - Hookes-type joints
  - rear wheel drive shafts
  - rear wheel drive final drives
  - front wheel drive final drives
- testing procedures for light vehicle automatic transmission and driveline systems, including:
  - test drive procedures
  - abnormal noise analysis
  - transmission oil pressure tests
  - sources of fluid leaks
  - driveline angle measurement
- types and key features of diagnostic testing equipment required to diagnose complex faults in light vehicle automatic transmission and driveline systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data

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  - waveforms
  - vehicle continuous and non-continuous monitored systems
- methods and processes for documenting and reporting diagnostic findings and recommendations.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle automatic transmission and driveline systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle automatic transmission and driveline system specifications
- three different light vehicles with complex faults in their automatic transmission or driveline systems, including one vehicle with an electronically controlled automatic transmission
- automatic transmission and driveline system diagnostic equipment, including:
  - oil pressure gauge
  - scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in the automatic transmission and driveline systems of light vehicles.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTZ101 Diagnose and repair light vehicle emission control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the emission control systems of light vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The emission control systems include those in light vehicles or light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Light Vehicle Technical – Emission and Exhaust

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair light vehicle emission control system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose light vehicle emission control system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair light vehicle emission control system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.

Numeracy	• Interprets numeric information, including:
	  • exhaust gas percentages
	  • exhaust gas ratios.

Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTZ001 Diagnose and repair light vehicle emission control systems.

Links

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Assessment Requirements for AURLTZ101 Diagnose and repair light vehicle emission control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the emission control systems of two different light vehicles, in which the work must involve:
  - at least one of the following systems:
    - positive crankcase ventilation system
    - evaporative control system
    - air injection system
  - at least one of the following systems:
    - exhaust emission control system
    - exhaust gas recirculation system
    - diesel engine particulate filter system
    - diesel engine selective catalytic reduction (SCR) system
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - malfunctioning valves
  - malfunctioning air pumps
  - leaking or contaminated components.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair light vehicle emission control systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation

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- workplace procedures required to diagnose and repair light vehicle emission control systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing light vehicle emission control systems, including procedures for working with vehicles that produce toxic emissions
- environmental requirements relating to diagnosing and repairing light vehicle emission control systems
- operating principles of light vehicle emission control systems and associated components, including:
  - combustion chemistry and combustion emissions
  - engine blow-by
  - fuel volatility
- purpose and operation of light vehicle emission control systems and components, including:
  - evaporative control systems, including:
    - fuel tank vapour space
    - charcoal canister
  - crankcase ventilation systems, including:
    - positive crankcase ventilation (PCV)
    - diesel engine crankcase ventilation systems
  - exhaust emission control systems, including:
    - reduction and oxidation catalytic converters
    - air injection systems
    - diesel engine particulate filter systems
    - diesel engine SCR systems
  - exhaust gas recirculation (EGR) systems
  - emission control through engine design, including:
    - combustion chamber design
    - valve overlap
    - variable valve timing
- diagnostic testing procedures for light vehicle emission control systems, including procedures for testing:
  - evaporative control system operation

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  - crankcase ventilation system operation
  - catalytic converter operation
  - air injection system operation
  - diesel engine particulate filter system operation
  - diesel engine SCR system operation
  - exhaust gas analysis
  - EGR system operation
- repair procedures for light vehicle emission control systems, including procedures for removing, replacing and adjusting them
- post-repair testing procedures for light vehicle emission control systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle emission control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle emission control system specifications
- two different light vehicles with emission control systems specified in the performance evidence
- diagnostic equipment for petrol or diesel light vehicle emission control systems
- tools, equipment and materials appropriate for repairing petrol or diesel light vehicle emission control systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURMBA101 Transport light competition vehicles and support equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to prepare and transport equipment and a light competition vehicle. It involves preparing for the task, selecting and packing tools and equipment, fitting transportation devices, components and covers to a competition vehicle, and loading and unloading required tools, equipment and competition vehicle. The light competition vehicles are under 300 kg of unladen weight, including go-carts, motorcycles, mountain bikes or jet skis.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Support and Logistics

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare requirements for motor sport event	1.1 Determine job requirements from team instructions, category rules and supplementary regulations 1.2 Source and select specific tooling and equipment needed for event 1.3 Pack tools and equipment for transportation and secure to avoid damage 1.4 Check equipment listing and account for resources
2. Load and secure	2.1 Compile checklist for securing resources and vehicle

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ELEMENTS	PERFORMANCE CRITERIA
light competition vehicle and tools and equipment for transportation	2.2 Load vehicle, tools and equipment according to safety requirements and team procedures 2.3 Secure vehicle, tools and equipment and check restraint mechanisms according to safety requirements and team procedures 2.4 Store hazardous material according to safety requirements and team procedures 2.5 Secure transporter tailgates, ramps, doors and bins as required according to safety requirements and team procedures
3. Unload vehicle, tools and equipment	3.1 Release vehicle, tools and equipment from restraints and unload according to safety requirements and team procedures 3.2 Clean transport vehicle and prepare for subsequent use 3.3 Check restraint mechanisms and holding points for integrity according to team procedures 3.4 Report problems with transport vehicle to specified personnel as required and according to team procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.

Numeracy	• Uses basic mathematical operations, including addition and subtraction, to:
	  • count equipment
	  • calculate weight.

Oral communication	• Reports problems with transport vehicle to team members.
Writing	• Fills out equipment logs and official documentation legibly.
Teamwork	• Works as part of a team to ensure materials are available as needed and time wastage is minimised.
Planning and organising	• Uses available space within transporter efficiently • Interprets loading and unloading sequence and avoids backtracking or workflow interruptions.
Problem solving	• Determines methods of loading and unloading disabled or damaged vehicles.

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Unit Mapping Information

Supersedes and is equivalent to AURMBA001 Transport light competition vehicles and support equipment.

Links

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Assessment Requirements for AURMBA101 Transport light competition vehicles and support equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- load and unload at least two different light competition vehicles, each under 300 kg of unladen weight, and support equipment on and off a vehicle transporter, including one vehicle at a sanctioned motor sport event.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to transport light competition vehicles and support equipment, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to transport light competition vehicles and support equipment, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to transporting light competition vehicles and support equipment, including procedures for:
  - selecting and using personal protective equipment (PPE), including hearing and eye protection

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  - manually handling loads
  - transporting and storing dangerous goods and hazardous chemicals
- job requirements relating to transporting light competition vehicles and support equipment, including:
  - light competition vehicle to be transported
  - materials and equipment to be loaded
- procedures for transporting light competition vehicles and support equipment, including:
  - preparing light competition vehicles for transportation
  - preparing support equipment for transportation, including tools, tyres and wheels
  - loading and unloading light competition vehicles and support equipment
  - securing vehicles and support equipment
- procedures for cleaning and preparing transport vehicles for subsequent use, including procedures for checking restraints, mechanisms and holding points.

Assessment Conditions

Competency is to be assessed in the workplace, for one sanctioned event.

Other competencies are to be assessed in an automotive repair workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light competition vehicles that they have transported, e.g. team event documentation.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two different motor sport events, including one sanctioned event
- PPE, including hearing and eye protection
- two different light competition vehicles and support equipment requiring transport to a motor sport event
- vehicle transporter suitable for a light competition vehicle.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURMCA101 Manage motor sport team media liaison

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to liaise with the media on behalf of a motor sport team and to support team members during media interviews and appearances. It involves researching the media liaison needs of the team and identifying the most appropriate media outlets, arranging media interviews, and preparing a budget to support media liaison activities. The unit requires individuals to demonstrate discretion, judgement and problem-solving skills when developing media releases and arranging media interviews.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify team media requirements and limitations	1.1 Identify desired outcomes of media liaison relevant to team goals 1.2 Identify limitations on information to be provided 1.3 Develop media liaison budget 1.4 Research media outlets and persons, and make decision regarding choice of required media according to team requirements, ethical conduct, and promotional partner requirements
2. Prepare media	2.1 Select type of media suitable for promotional strategy and

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ELEMENTS	PERFORMANCE CRITERIA
information	team requirements 2.2 Research specific media outlet information needs 2.3 Consider media needs and requests in light of team objectives, confidentiality requirements and ethical issues 2.4 Research and document team information and performance statistics 2.5 Prepare suitable information for release
3. Issue media information	3.1 Contact media personnel and agree on timing arrangements for release 3.2 Obtain team management approval and provide information to media outlet 3.3 Advise promotional partner representatives of release details
4. Arrange media interviews	4.1 Contact media persons and negotiate requirements 4.2 Determine interview schedule and agenda 4.3 Research and prepare material for interviews 4.4 Brief team persons and coach in presentation techniques as required 4.5 Inform team management regularly of arrangements and outcomes 4.6 Advise promotional partner representatives of interview details
5. Evaluate publicity benefits	5.1 Obtain exposure statistics from media outlets 5.2 Obtain promotional partner feedback on media release and interview 5.3 Analyse data and feedback to assess effectiveness 5.4 Measure outcomes against media liaison budget and team objectives

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets dates and time • Uses basic mathematical operations, including addition and subtraction, to calculate budgets.

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SKILL	DESCRIPTION
Oral communication	• Clarifies media requirements with a range of people, including team personnel, team management and media outlet personnel.
Reading	• Identifies, organises and interprets information from a range of sources, including internet websites, promotional literature, media statistics and internal workplace literature.
Writing	• Fills out workplace documentation legibly and produces a range of material, including business emails, letters, team information for media outlets, and updates to team management.
Teamwork	• Works collaboratively with team members to promote the motor sport team.
Planning and organising	• Ensures personnel are in the right places at the right time.
Problem solving	• Determines most effective media for the budget and achievement of team's goals.

Unit Mapping Information

Supersedes and is equivalent to Equivalent to AURMCA001 Manage motorsport team media liaison.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMCA101 Manage motor sport team media liaison

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop different media releases for at least three types of media
- arrange at least two different media appearances of a motor sport team member, including two of the following:
  - radio
  - television
  - live appearance at a motor sport race event
  - guest speaker at a motor sport promotional event.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to manage motor sport team media liaison including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - internet resources and digital data
- workplace procedures required to manage motor sport team media liaison including:
  - documentation procedures
- procedures for identifying team media requirements, including:
  - types of media suitable for motor sport
  - media outlet information needs
  - legislation and codes of practice relating to ethical advertising
  - procedures for developing media budgets

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- procedures for preparing media information, including researching and documenting team information and performance
- limitations affecting information to be provided:
  - team requirements
  - confidentiality
  - ethical conduct
  - promotion partner requirements
- attributes for suitability of information including:
  - clarity and succinctness
  - appropriateness to target audience
  - targeting to team and media outlet needs
  - compliance with industry ethics
- media interview procedures, including:
  - appropriate presentation of team personnel
  - coaching techniques of team personnel
- methods of evaluating media publicity, including:
  - interpreting media outlet exposure
  - obtaining, analysing and interpreting promotional partner feedback
  - measuring media publicity against team media budget and team objectives.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the media information and interviews they have managed for motor sport team members, e.g. media releases.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport team or simulated team
- types of media specified in the performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMCA102 Manage motor sport team promotional partnerships and marketing

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes skills and knowledge required to determine opportunities and requirements in relation to marketing a motor sport team and attracting and managing promotional partnerships. It involves researching promotional requirements, devising and implementing marketing strategies, preparing partnership proposals, and coordinating promotional activities. The unit requires individuals to demonstrate discretion, judgement and problem-solving skills when researching promotional opportunities and devising marketing strategies.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research team marketing opportunities and promotional partnership requirements	1.1 Identify, analyse and document strengths, weaknesses, opportunities and threats (SWOT) of current partnerships and marketing strategies 1.2 Consult team members and other parties regarding potential marketing opportunities, and seek specialist marketing advice as required 1.3 Research and document promotional partnership requirements 1.4 Identify and document principles, policies and strategic

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ELEMENTS	PERFORMANCE CRITERIA
	direction of the team in relation to marketing and partnerships to enable marketing effort to be focused
2. Devise and implement a team marketing strategy	2.1 Analyse promotional strategies emphasising team strengths with team members 2.2 Identify legal, ethical and environmental market constraints and determine their effect on marketing objectives 2.3 Research promotional strategies and develop and document a marketing strategy 2.4 Develop and document risk management strategies 2.5 Brief team members on their roles and responsibilities with regard to marketing strategy
3. Prepare promotional partnership proposal	3.1 Determine required team funding or sponsorship amount and type 3.2 Research and develop networks for funding and sponsorship in line with team policies, aims and objectives 3.3 Identify potential promotional partner on the basis of supporting team principles and policies, and approach with the aim of proposing a promotional partnership 3.4 Research and document potential promotional partner requirements 3.5 Identify and document benefits to promotional partner 3.6 Prepare information regarding opportunities and benefits in a professional format and distribute to potential promotional partner
4. Present proposal to promotional partners	4.1 Conduct follow-up with promotional partner representatives and arrange meeting 4.2 Prepare presentation and supporting material specific to potential promotional partner 4.3 Forward supporting material prior to meeting 4.4 Attend meeting with potential promotional partner and conduct presentation 4.5 Identify proposed variations to partnership terms and conditions during negotiations and document as required
5. Coordinate promotional partnership activities	5.1 Establish written contract or agreement with promotional partner 5.2 Brief team members on details and commitments of promotional partnership arrangements 5.3 Organise activities according to promotional partnership agreements and honour agreements made 5.4 Monitor and evaluate activities in terms of team and promotional partner objectives

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ELEMENTS	PERFORMANCE CRITERIA
	5.5 Provide feedback to and request from promotional partner as required 5.6 Action and monitor payments from promotional partner and other contract formalities

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition and subtraction, to calculate payments.
Oral communication	• Discusses team marketing opportunities and promotional partnership requirements with a range of people, including team personnel, team management and promotional partners.
Reading	• Interprets information from a range of sources, including internet websites, promotional pamphlets, media statistics and internal workplace material.
Writing	• Produces a range of material, including business emails, letters and presentations to promotional partners.
Teamwork	• Works collaboratively with team members when managing promotional partnerships and marketing.
Planning and organising	• Sets up meetings • Organises promotional activities.
Problem solving	• Conducts SWOT analyses • Analyses promotional strategies • Develops risk management strategies • Develops networks for funding and sponsorship • Determines potential benefits to promotional partners.
Technology	• Uses digital communication devices to gather and disseminate information.

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Unit Mapping Information

Supersedes and is equivalent to AURMCA002 Manage motorsport team promotional partnerships and marketing.

Links

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Assessment Requirements for AURMCA102 Manage motor sport team promotional partnerships and marketing

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare, present, implement and evaluate two different promotional proposals for a motor sport team, each of which must include:
  - profile of team and team members
  - team achievements
  - proposed partnership arrangements
  - marketing strategy for team events
  - benefits to promotional partner.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to manage motor sport team promotional partnerships and marketing, including:
  - information provided by customer and supervisors
  - internet resources and digital data
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to manage motor sport team promotional partnerships and marketing, including:
  - documentation procedures
- procedures for identifying team marketing opportunities and promotional partner requirements, including analysis of strengths, weaknesses, opportunities and threats (SWOT)
- key components of Australian Consumer Law (ACL) relating to legal and ethical requirements of advertising, including misleading or deceptive conduct
- key considerations in developing a marketing strategy, including:

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    - measurable performance targets
- key components of written agreements or contracts with promotional partners, including:
    - full details of commitments made by both parties
- procedures for devising and implementing a motor sport team marketing strategy
- procedures for preparing promotional partnership proposals
- methods of presenting promotional partnership proposals to promotional partner representatives
- procedures for implementing promotional partnership activities, including:
    - methods of producing and required content of written contracts or agreements
    - procedures for monitoring promotional activities for effectiveness and value
    - procedures for providing feedback to, and gaining feedback from, promotional partners.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the promotional partnerships and marketing that they have managed for a motor sport team, e.g. marketing brief.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport team or simulated team
- key components of Australian Consumer Law (ACL) relating to legal and ethical requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMDA101 Develop and update motor sport industry knowledge

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to develop and update general knowledge of the motor sport industry, including industry structure, event categories and classifications, rules and regulations, and roles of officials and volunteers. It involves researching, sourcing, developing and applying current and emerging information about the industry.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Officiating

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research information on the structure and operation of the motor sport industry	1.1 Determine motor sport industry structure and operation 1.2 Identify sources of information about the motor sport industry 1.3 Access sources of information, establish networks, and establish key contacts within the motor sport sector
2. Source and apply information on ethical and legal issues for motor	2.1 Obtain information on legal and ethical issues to assist effective work performance 2.2 Apply legal obligations and ethical industry practices in the course of own work

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ELEMENTS	PERFORMANCE CRITERIA
sport officiating	
3. Explore opportunities to participate and update motor sport knowledge	3.1 Compile annual calendar of events for own motor sport discipline 3.2 Identify and document key officiating and volunteer roles at motor sport events relating to discipline 3.3 Identify and document roles best suited to own level of knowledge, skills and interest 3.4 Identify and use opportunities to improve own performance and update knowledge of the motor sport industry

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Liaises with team members and other persons involved in the motor sport industry to improve own motor sport industry knowledge.

Reading	• Interprets technical information and terminology found in:
	  • motor sport organisation literature, code of conduct, policies and procedures
	  • controlling body rules, category rules and supplementary regulations
	  • event policies and procedures relating to own motor sport discipline.

Writing	• Fills out workplace documentation legibly.

Unit Mapping Information

Supersedes and is equivalent to AURMDA001 Develop and update motorsport industry knowledge.

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Assessment Requirements for AURMDA101 Develop and update motor sport industry knowledge

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop and document knowledge of the organisational structure, competition categories, event rules and regulations, and roles of officials and volunteers in at least one of the following motor sport industry disciplines:
  - automobile (car, truck or go-cart)
  - motorcycle
  - powerboat
- compile a calendar of events for the above selected motor sport discipline.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to develop and update motor sport industry knowledge, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - internet resources
- workplace procedures required to develop and update motor sport industry knowledge, including:
  - documentation procedures
- key features of the motor sport industry, including:
  - structure and hierarchy
  - major industry bodies and associations
  - motor sport disciplines
  - general knowledge of different types of motor sports

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  - participation opportunities within the motor sport industry
- key characteristics of motor sport discipline selected in the performance evidence, including:
  - competition categories and scope
  - event protocols, rules and regulations, including supplementary regulations
  - types and roles of officials and volunteers
  - protocols and procedures for communicating with stewards, officials and other relevant persons
  - competition calendars
- key motor sport organisations and associations
- legal and ethical issues that impact on motor sport officials and volunteers, including ethical conduct while officiating.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having developed and updated their motor sport industry knowledge, e.g. event sign-on sheet.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- information and communication technology, including the internet
- current sources of motor sport industry information
- National Competition Rules (NCR) and event supplementary regulations
- industry magazines and related publications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMDA107 Act as a steward at motor sport events

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to act as a steward at a motor sport event. It requires strong verbal and written communication skills, as well as extensive knowledge of the conduct of the applicable motor sport category, its rules and regulations, and its judiciary processes. The steward is usually appointed by the motor sport controlling body and has the authority to act on the body's behalf to ensure the event is conducted in compliance with all applicable rules and regulations. This includes ensuring all aspects of the event organisation meet requirements before the event can proceed. During the event, the steward must ensure it is conducted according to the rules and regulations and has the power to stop the event or suspend participants. The steward can also adjudicate on protests, disputes or breaches of the rules.

This unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Officiating

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Authorise the commencement of event	1.1 Evaluate event documentation for clarity and compliance with controlling body requirements 1.2 Confirm that all essential official positions are filled by qualified or experienced people as required 1.3 Confirm that facilities, equipment, personnel and safety arrangements meet controlling body requirements

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ELEMENTS	PERFORMANCE CRITERIA
	1.4 Order commencement of event according to category rules and supplementary regulations
2. Monitor the event	2.1 Monitor event progress to ensure that rules and regulations are followed, settle issues that arise and impose penalties subject to the right of appeal, according to category rules and supplementary regulations 2.2 Communicate with Clerk of Course throughout the event according to category rules and supplementary regulations 2.3 Authorise modifications to program or event conditions reflecting safety requirements or exceptional circumstances in consultation with Clerk of Course and according to category rules and supplementary regulations 2.4 Exclude vehicles deemed unsafe or non-compliant and participants deemed unfit from event according to category rules and supplementary regulation 2.5 Order vehicle, fuel or other compliance test as required and according to category rules and supplementary regulations 2.6 Amend event results as required according to category rules and supplementary regulations
3. Adjudicate on protests or disputes	3.1 Notify persons involved in attending hearings on protests and disputes according to category rules and supplementary regulations 3.2 Clarify nature of protest or dispute and identify applicable rules and regulations 3.3 Hear and evaluate evidence according to category rules and supplementary regulations 3.4 Make decision and impose required penalty according to category rules and supplementary regulations 3.5 Implement procedures for appeal as required and according to category rules and supplementary regulations 3.6 Maintain records of proceedings and outcomes according to category rules and supplementary regulations
4. Complete final report	4.1 Collect personal notes, event documentation and results on which report will be based at conclusion of event 4.2 Write event report according to category rules and supplementary regulations 4.3 Secure and store evidence for appeals for future reference 4.4 Submit final report to controlling body within designated timeframe and according to category rules and supplementary regulations

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Applies procedures to different situations and motor sport events • Keeps abreast of motor sport event rules and regulations.
Oral communication	• Gathers, interprets and relays information with other stewards, officials and event personnel.
Reading	• Evaluates event documentation • Interprets category rules and supplementary regulations.
Writing	• Produces legible records of protests and disputes.
Teamwork	• Leads and works effectively with others.
Planning and organising	• Ensures events run according to timelines.
Self-management	• Works autonomously.

Unit Mapping Information

Supersedes and is equivalent to AURMDA007 Act as a steward at motor sport events.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMDA107 Act as a steward at motor sport events

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- act as a steward in two different motor sport events, one of which must be a sanctioned event and must include an adjudication of a protest or dispute
- produce a final report for each event.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to act as a steward at motor sport events, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - information provided by controlling body
  - event documentation
- workplace procedures required to act as a steward at motor sport events, including:
  - documentation procedures
- key features of motor sport events, including:
  - organisational structures of events, including authority and communication lines
  - category rules and supplementary regulations of events
- motor sport officiating at above events, including:
  - responsibilities and tasks of a steward
  - protocols for communicating with other officials
  - professional and ethical responsibilities of stewards
  - personal preparation, resources and equipment required for officiating
  - motor sport protest, inquiry and appeal processes and procedures

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  - principles of administrative law and natural justice when applied to motor sport investigations, protests, inquiries and appeals
  - conflict management techniques
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice relating to motor sport events, including work health and safety (WHS) and environmental regulations
- key features in event reports, including:
  - details of conduct of event
  - results of each competition
  - details of any protests, decisions, appeals and penalties
- organisational policies and procedures relating to acting as a motor sport steward, including:
  - emergency response procedures
  - risk management procedures
  - reporting and recording procedures
  - planning processes for event.

Assessment Conditions

Competency is to be assessed in the workplace, for one sanctioned event.

Other competencies are to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having acted as a steward at a motor sport event, e.g. event sign on-sheet.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two different motor sport events, including one sanctioned event
- motor sport event officiating documentation, including rules and regulations, safety procedures and event procedures
- motor sport event officiating equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMGA101 Set up and dismantle temporary work location and equipment at motor sport events

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to set up a temporary work location and equipment at a motor sport event according to team requirements. It involves preparing, setting up and dismantling a temporary work location and equipment storage, laying out equipment, erecting team promotional signage, and setting up a functional workspace in the temporary location.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare site	1.1 Determine site information and requirements and confirm with site supervisor or circuit manager 1.2 Consider security and confidentiality issues and select risk management measures 1.3 Identify hazards associated with work site and manage risks according to workplace procedures and safety requirements 1.4 Consider access paths when positioning equipment and tooling, and take measures to eliminate hazards
2. Assemble temporary	2.1 Unload tools and equipment from transporters according to

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ELEMENTS	PERFORMANCE CRITERIA
work shelter	safety requirements and team requirements and procedures 2.2 Source work shelter and interpret fittings information 2.3 Assemble, erect and secure shelter and associated fittings according to shelter manufacturer procedures, team requirements, event supplementary regulations, and safety requirements 2.4 Identify and report problems with temporary work shelter to necessary persons according to team procedures as required
3. Position equipment and tooling in work area	3.1 Assemble and prepare equipment according to manufacturer procedures, team requirements and safety requirements 3.2 Position equipment according to team requirements, controlling body rules, category rules and supplementary regulations, and safety requirements 3.3 Identify, fit and install required personal protective equipment (PPE) according to manufacturer specifications and team requirements 3.4 Identify problems with work area and report to necessary persons according to team procedures as required 3.5 Monitor effectiveness of area layout during use, and make recommendations for change to persons as required
4. Dismantle temporary work shelter	4.1 Clean, dismantle and pack shelter in preparation for transportation according to team procedures and safety requirements 4.2 Account for, check and pack tooling and equipment in preparation for transportation according to team procedures and safety requirements 4.3 Load shelter, tools and equipment on to vehicle transporters according to team procedures and safety requirements 4.4 Clean work area and inspect for serviceable condition according to team procedures and local requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition and

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SKILL	DESCRIPTION
	subtraction, to count tools and equipment.
Oral communication	• Confirms site requirements with site supervisor or circuit manager • Reports unsafe situations and hazards and clarifies team safety procedures and requirements with team members.
Reading	• Interprets labels and signage associated with dangerous goods and hazardous substances.
Teamwork	• Works with others and in a team using cooperative approaches to optimise work practices.
Planning and organising	• Implements team safety requirements, controlling body rules, category rules or supplementary regulations to manage unsafe situations and hazards.

Unit Mapping Information

Supersedes and is equivalent to AURMGA001 Set up and dismantle temporary work location and equipment at motor sport events.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMGA101 Set up and dismantle temporary work location and equipment at motor sport events

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- set up and dismantle a temporary work location at three different motor sport event locations, including at least one sanctioned motor sport event.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to set up and dismantle temporary work location and equipment at motor sport events, including:
  - information provided by customer and supervisors
  - information provided by controlling body
  - manufacturer specifications and procedures or equivalent documentation
  - event documentation
- workplace procedures required to set up and dismantle temporary work location and equipment at motor sport events, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to setting up and dismantling a temporary work location and equipment at a motor sport event, including procedures for:

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  - selecting and using personal protective equipment (PPE)
  - identifying hazards and managing risks
- key requirements of motor sport event category rules and supplementary regulations
- principles and functionality requirements of the layout of temporary work shelter, including:
  - workflow of pit lane and service area operations
  - tooling and equipment required for specific events
  - methods of monitoring effectiveness of area layout
- temporary shelter assembly and erection methods and techniques, including procedures for:
  - positioning equipment for ease of access, security, logical workflow and ergonomic use
  - setting up equipment for safe and effective operation, including:
    - correct boom height
    - securing gas bottles
    - securing service area moorings.

Assessment Conditions

Competency is to be assessed in the workplace, for one sanctioned event.

Other competencies are to be assessed in an automotive repair workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motor sport events in which they have set up and dismantled temporary work locations and equipment, e.g. event sign-on sheet.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- three different motor sport events, including one sanctioned event
- motor sport event officiating documentation, including rules and regulations, safety procedures and event procedures
- site instructions
- temporary shelter
- temporary shelter specifications and erection procedures
- tools, equipment and materials appropriate for erecting temporary shelter
- tools and equipment appropriate for setting up and dismantling temporary work locations and equipment at specific motor sport events.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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Links

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AURMGA102 Manage personal presentation and development in a motor sport environment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to manage personal presentation, and learning and career options, develop personal conflict management skills and a health and fitness plan in a motor sport environment. It involves being able to identify personal presentation requirements and personal strengths, and support career paths with appropriate learning, manage physical health and fitness, and communicate effectively in a team.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish personal presentation standards	1.1 Clarify personal presentation expectations from position description, and work and team role 1.2 Develop and implement strategies to achieve personal presentation standards 1.3 Maintain personal presentation standards according to team requirements

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ELEMENTS	PERFORMANCE CRITERIA
2. Determine potential career paths in motor sport	2.1 Identify personal strengths and opportunities for improvement 2.2 Review and link personal goals and team goals 2.3 Identify career options within and outside the team and potential career paths to achieve personal goals 2.4 Document career achievements and experience and prepare a comprehensive résumé
3. Manage personal learning in motor sport	3.1 Research different learning styles and identify own learning style preference 3.2 Research and apply effects of preferred learning styles in the team environment 3.3 Develop strategies to maximise effectiveness of personal learning 3.4 Review and modify learning strategies as required
4. Develop personal health and fitness plan	4.1 Identify and manage personal nutritional requirements required for optimal performance in motor sport environment 4.2 Manage stress and fatigue using required strategies 4.3 Identify and manage personal physical fitness requirements in relation to team role requirements 4.4 Develop strategies to manage impact of negative factors on personal competence and performance within motor sport environment 4.5 View and modify own health and fitness plan as required
5. Establish personal conflict resolution strategies	5.1 Identify potential causes of conflict in relation to preferred learning style within the team environment 5.2 Implement personal strategies for dealing with conflict 5.3 Research communication techniques and implement strategies for improving communication with team members

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a simple plan to achieve personal goals.
Oral communication	• Clarifies own personal presentation requirements, career paths and conflict resolution strategies with team members and supervisors within the motor sport environment.

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SKILL	DESCRIPTION
Teamwork	• Works as part of a team, using the team as a resource.

Unit Mapping Information

Supersedes and is equivalent to AURMGA002 Manage personal presentation and development in a motor sport environment.

Links

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Assessment Requirements for AURMGA102 Manage personal presentation and development in a motor sport environment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- meet team personal presentation requirements throughout three different motor sport events, which must include one of each of the following:
  - workshop
  - competition event
  - promotional activity
- develop a personal résumé, including detailed statements of the following:
  - qualifications and training
  - experience in the motor sport industry
  - relevant experience beyond the motor sport industry
  - testimony from employers, colleagues or training bodies
- develop a personal health and fitness plan, including detailed statements of the following:
  - three strategies for managing nutrition needs that demonstrate a knowledge of recommended nutritional intake
  - one strategy for increasing personal fitness in each of the following:
    - flexibility
    - cardiovascular fitness
    - muscular strength and endurance
  - three stress management strategies
- demonstrate conflict resolution strategies during one of the following situations at one motor sport event:
  - tight timeframes or extended work hours
  - different work styles
  - persons external to the team.

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Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to manage personal presentation and development in a motor sport environment, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - online resources
  - industry contacts
- workplace procedures required to manage personal presentation and development in a motor sport environment, including:
  - documentation procedures
- personal presentation standards, including:
  - team roles, responsibilities and relationships
  - motor sport sectors and categories
  - presentation standards of motor sport team roles, including hair, clothes, personal hygiene, posture, body language and speech
- types of career paths in motor sport
- methods for identifying personal strengths, including:
  - positive attitude to succeed in motor sport
  - strategies that maximise effectiveness of personal learning
- key features of goal setting methods, such as specific, measurable, achievable, realistic, and timely (SMART)
- key features for developing personal learning management program, including:
  - developing résumé
  - identifying and catering for different learning styles when working together in teams
- key features of personal health and fitness plans, including:
  - human nutritional requirements, food groups and their effect on the human body, including specific nutritional requirements for functioning in a motor sport environment
  - impact of legal and illegal drugs on the human body and their implications in motor sport
  - principles of physical fitness, and fitness requirements for functioning effectively in a motor sport environment
- key features of personal conflict resolution strategies and techniques, including:
  - common causes of conflict within a motor sport team environment
  - communication principles and techniques
  - group dynamics in high pressure environments.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having managed their personal presentation and development in a motor sport environment, e.g. own résumé.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport workshop, competition event and promotional activity
- computer with word processing capabilities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURMMA101 Operate in a motor sport environment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to determine a career path, meet motor sport team expectations and employment expectations, manage daily work activities, and contribute to the effective working of the team.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Management, Leadership and Supervision

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine potential career path in motor sport and develop individual goals	1.1 Identify structure of motor sport sector 1.2 Assess personal skills to identify strengths and weaknesses 1.3 Research and determine motor sport team expectations 1.4 Set goals to achieve personal expectations 1.5 Research and match potential career paths with personal goals 1.6 Identify and incorporate training needs into career planning
2. Meet motor sport team employment requirements	2.1 Identify team organisational structure 2.2 Comply with obligations to employers and others 2.3 Observe regulatory and safety requirements throughout work 2.4 Identify and comply with team lines of communication and authority

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ELEMENTS	PERFORMANCE CRITERIA
	2.5 Identify and comply with applicable legislation, regulations, codes of practice and team expectations, policies and procedures
3. Manage daily work activities in motor sport environment	3.1 Use required lines of communication with supervisors, peers and external persons 3.2 Identify, prioritise and complete individual tasks within designated timeframes and according to team standards and work schedule 3.3 Monitor and adjust own work according to feedback obtained from supervisors 3.4 Seek assistance from required persons when difficulties arise in achieving allocated tasks 3.5 Make changes to workload or work priorities when unforeseen circumstances or developments occur 3.6 Maintain well organised and safe personal workspace according to team and workplace standards 3.7 Identify and report potentially discriminating or hazardous practices and policies to team persons
4. Contribute to productive team environment	4.1 Share information and knowledge with team members to ensure designated work goals are met 4.2 Identify and prioritise personal work objectives according to team requirements 4.3 Receive, encourage and act upon constructive feedback from other team members 4.4 Detect variations from team standards in quality of components or work practices and report to team members according to team procedures 4.5 Seek assistance actively from, or provide to, other team members when difficulties arise 4.6 Use communication techniques to gather and understand instructions 4.7 Identify signs of interpersonal conflict and act constructively upon or refer to a supervisor

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Adapts to different work circumstances • Recognises and corrects errors in own performance.
Numeracy	• Interprets basic numerical information in work instructions.
Oral communication	• Clarifies and confirms information and instructions using active listening and questioning techniques • Speaks clearly and directly to present problems or issues to required personnel.
Reading	• Interprets motor sport codes of practice and team policies and procedures.
Writing	• Completes basic workplace documentation, such as job cards.
Teamwork	• Works with others and in a team using cooperative approaches to optimise work practices and contribute to a productive team environment.
Planning and organising	• Plans and organises activities, including equipment and resources, to avoid backtracking, workflow interruptions or wastage.
Problem solving	• Develops solutions to unpredicted situations, clarifies work instructions, and resolves conflict.

Unit Mapping Information

Supersedes and is equivalent to AURMMA001 Operate in a motorsport environment.

Links

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Assessment Requirements for AURMMA101 Operate in a motor sport environment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- follow task instructions, operating procedures and inspection processes on two occasions in a motor sport environment that result in:
  - minimising the risk of injury to self and others
  - preventing damage to competition vehicle or equipment
- achieve above required outcomes within team time and quality standards
- perform a range of daily work activities in three different motor sport environments, in which the work must involve covering:
  - routine maintenance
  - pre-event preparation
  - a competition event
  - post-event maintenance and repairs
- work with and around other team members, including:
  - participating actively in a work group discussion or meeting
  - providing support on a work task to another group member
  - responding to feedback provided by a group member
  - contributing to the resolution of an issue, problem or conflict experienced by work group.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to operate in a motor sport environment, including:
  - information provided by customer and supervisors

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    - manufacturer specifications and procedures or equivalent documentation
    - event documentation
    - industry contacts
- workplace procedures required to operate in a motor sport environment, including:
    - establishing serviceability of tools and equipment
    - documentation procedures
    - housekeeping procedures
    - human resource procedures
- work health and safety (WHS) requirements relating to operating in a motor sport environment, including procedures for selecting and using personal protective equipment (PPE)
- team organisational structure, including:
    - team member roles and responsibilities
- key obligations to employers and others, including:
    - confidentiality requirements
- motor sport fundamentals, including:
    - motor sport categories
    - roles of Australian and international motor sport regulatory bodies
    - structure of the motor sport sector and of roles within teams, including
        - roles and functions of industry and association bodies
        - authority and communication lines within teams
    - motor sport work ethic and team expectations
    - motor sport terminology
- essential requirements of a motor sport environment, including:
    - routine maintenance
    - pre-event preparation
    - structure or format of competition event
- goal setting methods and techniques
- communication principles and techniques
- conflict resolution principles and techniques.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them having operated in a motor sport environment, e.g. team schedule.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- motor sport workplace or simulated workplace
- motor sport team policies and procedures relating to job descriptions, authority, and communication lines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURMMA102 Manage the preparation of motor sport competition vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to develop competition vehicle preparation specifications, checklists and schedules, and to supervise the preparation and assembly of a motor sport competition vehicle. It involves researching information, assessing personnel capabilities and schedule constraints, and supervising others to prepare a competition vehicle and check the post-preparation vehicle and work area.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Management, Leadership and Supervision

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop preparation specifications and checklists	1.1 Determine job requirements from competition information 1.2 Analyse rules, regulations, and vehicle specifications and tolerances for competitive advantage 1.3 Document and communicate work specifications to required personnel
2. Develop preparation schedule	2.1 Identify and source equipment and capabilities of required personnel to meet job specifications 2.2 Analyse constraints to schedule and document optimum sequence for vehicle preparation

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Analyse critical path and document factors affecting that path 2.4 Finalise preparation schedule and distribute to required personnel
3. Supervise preparation	3.1 Monitor team adherence to preparation schedule according to team requirements 3.2 Monitor work area for layout according to job requirements and for cleanliness 3.3 Carry out checks of vehicle during and after installation of components to ensure complete fitting 3.4 Evaluate and resolve problems with work area or operation of equipment according to safety and environmental requirements 3.5 Evaluate proposals for modifications or adaptation of equipment and components and adapt or adopt changes as required according to team requirements
4. Supervise post-assembly checks	4.1 Inspect vehicle, and identify and address problems according to team requirements 4.2 Supervise post-preparation checks and vehicle start-up by team 4.3 Supervise vehicle baseline set-up by team 4.4 Supervise clean-up of work area by team 4.5 Carry out final inspection of work area and vehicle and complete documentation

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Adapts procedures to different vehicles.
Numeracy	• Works with units of time when developing timelines within a preparation schedule.
Oral communication	• Communicates task specifications and preparation schedule to team members • Receives and gives information and advice to team members during vehicle preparation.

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SKILL	DESCRIPTION
Reading	• Interprets team instructions and procedures and controlling body rules, category rules and supplementary regulations.
Teamwork	• Works as a leader of a team to ensure team member roles are understood and time wastage is minimised.
Planning and organising	• Plans own tasks and those of a team to ensure work proceeds without interruption and within timelines.
Problem solving	• Produces solutions to problems with scheduling, component and equipment supply, and personnel capability • Evaluates a range of options and selects efficient solutions.
Self-management	• Works efficiently with minimal supervision and within timeframes.

Unit Mapping Information

Supersedes and is equivalent to AURMMA002 Manage the preparation of motor sport competition vehicles.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMMA102 Manage the preparation of motor sport competition vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage a team that is undertaking the assembly and preparation of at least one motor sport competition vehicle.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to manage the preparation of motor sport competition vehicles, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - event documentation
- workplace procedures required to manage the preparation of motor sport competition vehicles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to preparing a competition vehicle, including:
  - selecting and using personal protective equipment (PPE)

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    - using chemical cleaning and lubricating agents
- environmental requirements, including procedures for trapping, storing and disposing of chemicals and fluids released when assembling competition vehicles
- methods of determining competition vehicle design, quality, and material, equipment and quantities from team instructions, supplementary regulations and manufacturer specifications
- procedures for analysing rules, regulations, vehicle specifications and tolerances for competitive advantage
- key competition information, including:
    - team instructions and procedures
    - controlling body rules
    - category rules
    - supplementary regulations
- constraints to schedules, including:
    - timing and location of upcoming event
    - availability of equipment and components
    - availability of required personnel
- procedures for developing preparation schedules, including:
    - assembly and preparation processes applicable to competition vehicle
    - procedures for analysing team member capability for tasks
    - documentation procedures for preparation schedule including preparation checklists
    - procedures for determining work area layout
- procedures for supervising vehicle preparation, including:
    - procedures for developing and monitoring assembly inspection processes
    - methods of evaluating and remedying problems with work area and equipment operation
    - procedures for minimising waste material.

Assessment Conditions

Competency is to be assessed in the workplace, for one sanctioned event.

Other competencies are to be assessed in an automotive repair workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motor sport vehicles that they have prepared, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport workplace
- one motor sport competition vehicle requiring pre-event preparation

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- motor sport team with knowledge of competition vehicle pre-event preparation procedures
- tools and equipment required for the preparation of a competition vehicle.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMMA103 Manage motor sport operations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to manage motor sport operations, including logistics and resourcing as well as team compliance with motor sport regulatory requirements. It requires skills in motor sport team leadership and decision making.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Management, Leadership and Supervision

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan logistics for motor sport operation	1.1 Develop and document work plan for team sport operations in consultation with team members 1.2 Source and interpret safety requirements 1.3 Research and document resource and equipment requirements 1.4 Prioritise and match resource requirements to team budget, and confirm or modify priorities after consultation with team members 1.5 Document and amend operational plans according to team procedures and expectations
2. Oversee team activities during operation	2.1 Implement operational plans and brief team members with regard to their roles and responsibilities 2.2 Check operations to ensure optimum use of human and

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ELEMENTS	PERFORMANCE CRITERIA
	physical resources
3. Evaluate operational process	3.1 Evaluate operational progress against required quality of work and adherence to budget and time schedule, and report to required persons according to team requirements 3.2 Identify opportunities for preventative or corrective changes using outcomes of monitoring activity and feedback from team members 3.3 Communicate required changes to required persons in a logical and accessible manner 3.4 Monitor changes to confirm improvement to team efficiency 3.5 Maintain records of key information relating to operational processes according to team requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets dates and time • Uses basic mathematical operations, including addition and subtraction, to calculate team budget requirements.
Oral communication	• Discusses motor sport operations with a range of people, including team personnel, event management and regulatory body personnel.
Reading	• Interprets information from a range of sources, including internet websites, regulatory body written material, and workplace internal documentation.
Writing	• Fills out workplace documentation legibly, including emails, letters, operational work plans, and instructional material for team members.
Planning and organising	• Sets up meetings • Plans required resources and logistics.
Problem solving	• Prioritises resource needs and develops and amends operational work plans.

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Unit Mapping Information

Supersedes and is equivalent to AURMMA003 Manage motor sport operations.

Links

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Assessment Requirements for AURMMA103 Manage motor sport operations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop a motor sport operational procedure incorporating legislative safety requirements, including:
  - analysing the proposed procedure
  - producing a step-by-step operational procedure
  - identifying and analysing supporting documents to the procedure
- implement a process for one operational area of the motor sport team, including:
  - disseminating process information
  - monitoring operations
- review and update a process for an operational area of the motor sport team, including:
  - a system and sub-area/sub-system description
  - an evaluation of the effectiveness of the process in achieving desired outcomes
  - legal, regulatory or intellectual property law requirements
  - documentation of modifications to improve the process.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to manage motor sport operations, including:
  - information provided by customer and supervisors
  - information provided by motor sport regulatory body
  - internet resources and digital data
  - manufacturer specifications and procedures or equivalent documentation
  - operational plans, including:

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    - instructions and delegations
- workplace procedures required to manage motor sport operations, including:
    - documentation procedures
    - reporting and review procedures
- work health and safety (WHS) and motor sport regulatory body requirements relating to managing motor sport operations, including:
    - relevant legislation
    - selecting and using personal protective equipment (PPE)
- procedures for leading team members, including:
    - leadership models
    - delegation strategies
    - key features of goal setting methods, such as specific, measurable, achievable, realistic, and timely (SMART)
    - methods for reviewing and reporting team member performance
    - decision making models and techniques
- key considerations in a work plan, including:
    - timelines and milestones for team sport operations
    - team goals for operation
    - team member roles and responsibilities
    - team member performance reporting and review mechanisms
- procedures for ensuring team compliance with regulatory body requirements, including compliance with national, state and technical regulations of the Confederation of Australian Motor Sports (CAMS)
- procedures for determining team resource requirements
- procedures for determining team logistical requirements, including logistics and procurement management techniques
- procedures for evaluating operational processes, including analytical tools such as:
    - critical path analysis
    - cause and effect
    - force field analysis
    - Pareto analysis
    - strength, weakness, opportunity and threat (SWOT) analysis
    - decision trees.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the instances in which they have managed motor sport team operations, e.g. work plans.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport team or simulated team
- CAMS regulations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURMMA104 Manage motor sport team development

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to manage motor sport team development. It includes fostering team morale and teamwork ethics, managing conflict, and supporting the health and safety needs of team members. It involves consulting and working with team members to develop a shared understanding of team goals, roles and responsibilities.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Management, Leadership and Supervision

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop and implement team roles and responsibilities	1.1 Determine and document team roles and responsibilities in the workshop and event environment 1.2 Write role descriptions in conjunction with team members 1.3 Identify authority hierarchies and align to team roles, and identify and document joint responsibilities 1.4 Brief team members, implement roles, and make modifications to role descriptions as required
2. Develop and foster motor sport teamwork morale and ethics	2.1 Document and disseminate information on teamwork to team members 2.2 Discuss personal attitudes needed to succeed in motor sports

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ELEMENTS	PERFORMANCE CRITERIA
	with team members and develop strategies to support team members to reflect desired team image and approach 2.3 Communicate expectations of team standards of behaviour, commitment and presentation to team members 2.4 Encourage, monitor and correct maintenance of work ethic and image as required
3. Develop and implement team member health and fitness policy	3.1 Develop and document event catering procedures that meet nutritional requirements for persons operating in a motor sport team 3.2 Develop and monitor strategies for coping with stress and fatigue, communicate to team members 3.3 Develop physical fitness requirements of team members in relation to role requirements, communicate and monitor to team members 3.4 Communicate and monitor impact of negative factors on personal competence in a motor sport environment to team members
4. Apply conflict resolution strategies	4.1 Provide regularly opportunities for team members to discuss problems that directly or indirectly affect their work 4.2 Identify conflict situations and provide assistance to those involved to resolve conflict according to team procedures 4.3 Document outcomes and resolutions according to team procedures 4.4 Complete and store records of conflict and outcomes securely according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Discusses personal and work-related matters with team members in a professional manner.
Reading	• Interprets team policies and procedures relating to team ethics, image, health and fitness, and workplace conflict avoidance and resolution.

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SKILL	DESCRIPTION
Writing	• Develops and produces a variety of workplace informative documentation for team members.
Self-management	• Works autonomously.

Unit Mapping Information

Supersedes and is equivalent to AURMMA004 Manage motor sport team development.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMMA104 Manage motor sport team development

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage the development of one motor sport team, in which the work must involve:
  - developing role descriptions for all team members, including:
    - tasks and sub-tasks
    - responsibilities for outcomes
    - responsibilities for tooling, equipment and material
    - responsibilities for team members
    - responsibilities for systems
  - developing health and safety requirements for team members
  - developing and implementing three conflict resolution strategies, demonstrating for each strategy:
    - rationale for choice of strategy in relation to team environment
    - resolution options for conflict
    - analysis of strengths and weaknesses of strategy.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to manage motor sport team development, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to manage motor sport team development, including:
  - documentation procedures
  - reporting and record procedures

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- procedures for developing and implementing team roles and responsibilities, including typical team roles and hierarchical structure in a motor sport team
- requirements for records, including:
  - accuracy and completion
  - compliance with workplace requirements
  - administration according to confidentiality and privacy requirements
- negative factors impacting health and fitness, including:
  - misuse of prescription drugs
  - use of illicit drugs
  - poor nutrition or fitness regime
  - stress and fatigue
- information on team to be disseminated, including:
  - common purpose and approach
  - team performance goals
  - image or brand
  - morale and ethics
- procedures for developing and fostering motor sport teamwork ethics and image, including:
  - personal and work attitudes sought within the motor sport sector
  - positive and negative potential of different personal attitudes in a motor sport environment
  - positive and negative potential of differences between team and personal goals
  - ways in which individual team members can promote or negatively impact on desired team image
- procedures for developing and implementing team member health and fitness policies, including:
  - principles of physical fitness and fitness requirements for operating in a motor sport environment
  - specific nutritional requirements for operating in a motor sport environment
  - impact on the human body of using legal and illegal drugs and implications for a motor sport team
- procedures for applying conflict resolution strategies, including:
  - signs, stages and possible causes of conflict in the workplace
  - options for constructive responses to typical conflict situations
  - typical problems that can occur when applying conflict resolution strategies and related appropriate action that can be taken.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having managed motor sport team development, e.g. team development plan.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport team or simulated team
- job role descriptions
- team procedures and processes documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMMA108 Coordinate operations of a motor sport team

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to coordinate operations of a small motor sport team consisting of a minimum of three persons at a club non-professional level. It involves setting team goals and individual roles and responsibilities, and managing team finances, logistics and competition strategy development.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Management, Leadership and Supervision

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for motor sport event	1.1 Check and interpret controlling body rules, category rules and supplementary regulations requirements 1.2 Identify team member roles and responsibilities for event and check for compliance with controlling body rules, category rules and supplementary regulations and modify as necessary 1.3 Clarify team goals and roles and responsibilities of each team member with team members 1.4 Document agreed roles and responsibilities according to team procedures 1.5 Estimate team financial requirements in consultation with team members and prepare team budget

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ELEMENTS	PERFORMANCE CRITERIA
2. Develop team competition strategy	2.1 Seek input into competition strategy from team members, review performance in previous events, and examine current event conditions 2.2 Develop team strategy to attain competitive advantage 2.3 Develop and document contingency plans as part of strategy
3. Coordinate team participation at event	3.1 Develop team event schedule and distribute to team members 3.2 Arrange team travel and accommodation requirements 3.3 Allocate event day tasks and brief team members 3.4 Supervise competition vehicle preparation as required and arrange transport requirements 3.5 Document financial transactions according to team procedures 3.6 Supervise team operations at events and make regular checks of team members
4. Coordinate post-event activities	4.1 Arrange and attend post-event team debriefing sessions 4.2 Coordinate competition vehicle post-event check and repairs as required 4.3 Coordinate component and material replenishment 4.4 Prepare and present financial reports to team members for review as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses addition, subtraction, division and multiplication functions to estimate team financial requirements and prepare team budgets • Interprets calendars when developing team event schedules.
Oral communication	• Consults with team members regarding team member roles and responsibilities, team financial requirements, and team competition strategies • Briefs team members on allocated responsibilities and tasks • Conveys aspects of event and team member performance during post-event debriefing sessions using language and pace required for audience and purpose.

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SKILL	DESCRIPTION
Reading	• Interprets controlling body rules, category rules and supplementary regulations.
Technology	• Uses computer software to prepare team budgets • Navigates computer software, programs and web browsers to source information when arranging team schedule and team travel and accommodation requirements.

Unit Mapping Information

Supersedes and is equivalent to AURMMA008 Coordinate operations of a motor sport team.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMMA108 Coordinate operations of a motor sport team

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop a team competition strategy and implement team operational requirements for at least two different motor sport events, one of which must be a sanctioned motor sport event
- during above coordination work for each event, demonstrate two of the following:
  - identifying and clarifying team member roles and responsibilities
  - managing team finances
  - coordinating team participation in event
  - coordinating post-event activities.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to coordinate operations of a motor sport team, including:
  - information provided by customer and supervisors
  - internet resources, digital programs and software data
  - manufacturer specifications and procedures or equivalent documentation
  - controlling body rules, category rules, and supplementary regulation
- workplace procedures required to coordinate operations of a motor sport team, including:
  - documentation procedures
  - team member expertise and knowledge
- work health and safety (WHS) requirements relating to coordinating operations of a motor sport team, including procedures for identifying hazards and managing risks
- key requirements of controlling body rules, category rules and supplementary regulations for above events

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- principles of group dynamics
- key features of basic bookkeeping systems
- scenario and logistics planning
- time management strategies to prioritise event requirements
- elements of competitive advantage, including:
  - promotional advantage
  - technical advantage
  - psychological advantage
- key requirements of commonwealth, state or territory legislation, regulations, standards and codes of practice relating to coordinating the operations of a motor sport team, including reporting and recording procedures.

Assessment Conditions

Competency is to be assessed in the workplace, for one sanctioned event.

Other competencies are to be assessed in an automotive repair workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having coordinated team operations at a motor sport event, e.g. work schedule.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two different motor sport events, including one sanctioned event
- controlling body rules, category rules and supplementary regulations
- equipment, material, work instructions and deadlines appropriate for coordinating operations of a motor sport team.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTA101 Prepare and service light competition vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to prepare and service an already assembled light competition vehicle in the workshop or at a motor sport event. It involves preparing for the task, servicing the light competition vehicle, making adjustments as required, and completing workplace processes and documentation. The light competition vehicles are under 300 kg of unladen weight, such as go-carts, motorcycles or jet skis.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Determine job requirements from team instructions, category rules and supplementary regulations 1.2 Source servicing procedures and information 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools, equipment and materials for serviceability 1.5 Clean work area and lay out for job requirements 1.6 Report problems with work area or operation of equipment to personnel as required
2. Prepare competition	2.1 Position and secure vehicle ready for servicing according to

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ELEMENTS	PERFORMANCE CRITERIA
vehicle	manufacturer specifications and workplace procedures 2.2 Remove temporary bungs and covers and conduct engine pre-start checks according to team procedures and safety and environmental requirements 2.3 Carry out pre-service inspection and preparation according to manufacturer specifications, workplace procedures and safety requirements 2.4 Report inspection findings according to workplace procedures, and report recommendations for service, repairs or adjustments
3. Service competition vehicle	3.1 Carry out service and adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Start vehicle and systems, check pressures and temperatures for abnormal noise and leaks, according to team procedures and safety and environmental requirements 3.3 Check vehicle sub-assembly and systems operation according to team procedures and safety and environmental requirements 3.4 Shield vehicle components as required and according to team procedures 3.5 Document and report potential or existing problems to personnel as required and according to team procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Applies team procedures to different situations and motor sport events.
Reading	• Interprets team instructions, category rules and supplementary regulations.

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SKILL	DESCRIPTION
Numeracy	• Uses basic mathematical operations, including addition and subtraction, to measure and calculate fluid volumes using metric and imperial units of measurement • Interprets units of temperature and pressure.
Planning and organising	• Ensures that own tasks are carried out within team operation timeframes.

Unit Mapping Information

Supersedes and is equivalent to AURMTA001 Prepare and service light competition vehicles.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTA101 Prepare and service light competition vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare and service two different light competition vehicles, each under 300 kg of unladen weight.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to prepare and service light competition vehicles, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to prepare and service light competition vehicles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment, surplus components and consumables
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to preparing and servicing light competition vehicles, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - identifying acceptable tolerance levels for noise, heat and fumes

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    - methods of panel creation and their processes
- environmental requirements, including procedures for trapping, storing and disposing of fluids released during vehicle preparation
- team instructions, category rules and supplementary regulations relating to motor sport events
- competition vehicle servicing and preparation procedures, including:
    - work area and component layout procedures
    - cleaning methods and precautions
    - types of securing devices and securing methods
    - types of shielding devices and shielding methods
    - pre- and post-servicing adjustments, including procedures for checking:
        - electronic control units
        - data acquisition system components
        - communication equipment
        - circuit breakers, and relay and isolation switches
        - fuel tank and cell
        - pumps and reservoirs
        - fire bottles and controller
    - record keeping procedures
    - procedures for reporting equipment faults and component defects
    - engine pre-start checks
    - procedures for checking vehicle system pressures and temperatures
    - common types of abnormal noises and leaks
- procedures for checking and storing tools and equipment
- procedures for cleaning vehicles.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light competition vehicles that they have prepared and serviced, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport workplace or simulated workplace
- team instructions, category rules and supplementary regulations
- manufacturer light competition vehicle specifications
- personal and motor sport team safety procedures and requirements

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- two different light competition vehicles requiring service
- tools, equipment and materials appropriate for inspecting, servicing and adjusting light competition vehicles.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTA102 Assemble and prepare competition vehicles for motor sport events

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to assemble and prepare a competition vehicle in a motor sport environment. It involves preparing for the task, preparing components, installing sub-assemblies and systems, setting vehicle baseline configuration according to team requirements, supplementary regulations and component supplier specifications, and completing workplace processes and documentation.

The unit applies to those working in the motor sport industry. A competition vehicle is any vehicle that competes in a motor sport event of a competitive nature under one of the following categories: race, speed, rally road, off road, auto test and timed.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Collect event category information and analyse assembly requirements	1.1 Determine job requirements from event category information and workplace instructions 1.2 Check vehicle operating conditions and seek clarification of specifications as required 1.3 Source and interpret methods for assembly and preparation and select those required for the circumstances 1.4 Propose modifications or adaptation of equipment as required

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Prepare component requirements list and communicate to required persons 1.6 Determine procedures for minimising waste material
2. Prepare work area and equipment	2.1 Source and check tools and equipment for safe and effective operation 2.2 Clean and lay out work area for job requirements according to work safety requirements and team procedures 2.3 Identify hazards associated with the work and manage risks 2.4 Report problems with work area or operation of equipment to persons according to team procedures
3. Prepare components for assembly	3.1 Source and interpret assembly procedures and information 3.2 Clean components to facilitate pre-assembly inspection according to team procedures and safety and environmental requirements, and without causing damage to components 3.3 Inspect components for function and quality to ensure optimum use of resources 3.4 Report problems with components to persons according to team procedures as required
4. Install sub-assemblies	4.1 Inspect sub-assemblies for quality and readiness for installation according to manufacturer specifications 4.2 Install sub-assemblies and tension fasteners according to safety requirements and manufacturer installation sequences and techniques 4.3 Make checks to ensure accurate and complete fitting according to team procedures and manufacturer specifications 4.4 Report problems with sub-assemblies to persons according to team procedures as required
5. Install ancillary systems	5.1 Locate critical components according to function, susceptibility to damage, and ease of maintenance 5.2 Install critical components and tension fasteners according to team procedures and manufacturer specifications 5.3 Confirm optimum layout for wiring loom, connectors, hoses, hard lines and ancillary components 5.4 Install wiring loom, connectors, hoses, hard lines and ancillary components and tension fasteners according to manufacturer specifications, team procedures and safety requirements 5.5 Secure entire installation and shield to maximise reliability and minimise susceptibility to damage according to manufacturer specifications, team procedures and safety requirements 5.6 Make checks during and after installation to ensure accurate and complete fitting according to team procedures and manufacturer

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ELEMENTS	PERFORMANCE CRITERIA
	specifications 5.7 Report problems with components to persons according to team procedures as required
6. Conduct post-assembly checks	6.1 Check and top up vehicle fluid levels as required according to team procedures and manufacturer specifications 6.2 Remove temporary bungs and covers and conduct engine pre-start checks 6.3 Check sub-assemblies and ancillary systems for operation
7. Set vehicle baseline configuration	7.1 Determine vehicle baseline settings from team instructions, category regulations, and component supplier specifications 7.2 Establish level surface on which to place vehicle for set-up 7.3 Install springs and dampers according to manufacturer specifications, team procedures and safety requirements 7.4 Measure and adjust ride height and corner weight as required and according to manufacturer specifications, team procedures and safety requirements 7.5 Measure and adjust steering angles as required and according to manufacturer specifications, team procedures and safety requirements 7.6 Report potential or existing problems to persons according to team procedures as required
8. Complete work processes	8.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 8.2 Clear work area and dispose of or recycle materials according to workplace procedures 8.3 Check and store tools and equipment, and pack and store surplus components and consumables according to workplace procedures 8.4 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Measures components and uses basic addition, subtraction, division and multiplication, to calculate tolerances and clearances • Uses basic mathematical operations to calculate volume and area.
Oral communication	• Clarifies instructions • Reports problems with the work area, the operation of the equipment, or components and sub-assemblies.
Reading	• Interprets team instructions, supplementary regulations and manufacturer specifications.
Problem solving	• Determines assembly sequence and avoids backtracking or workflow interruptions.

Unit Mapping Information

Supersedes and is equivalent to AURMTA002 Assemble and prepare a competition vehicle for motor sport events.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTA102 Assemble and prepare competition vehicles for motor sport events

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- assemble and prepare at least two different competition vehicles in which the work must involve each of the following:
  - installing body, mechanical and electrical systems
  - installing fluid or pneumatic and fire systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to assemble and prepare competition vehicles for motor sport events, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation, including:
    - allowable design
    - quality
    - materials, equipment, and quantities
  - event category information, including:
    - supplementary regulations
- workplace procedures required to assemble and prepare competition vehicles for motor sport events including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to assembling and preparing competition vehicles, including procedures for:
    - selecting and using personal protective equipment (PPE) when assembling competition vehicles
    - using chemical cleaning and lubricating agents
    - methods of panel creation and their processes
- environmental requirements, including procedures for trapping, storing and disposing of chemicals and fluids released during assembly process
- details of competition vehicle design, quality, and material, equipment and quantities in team instructions, supplementary regulations and manufacturer specifications
- typical stages of competition vehicle assembly
- procedures for setting up work area and component layout
- component cleaning and inspection procedures
- procedures for assembling and installing sub-assemblies and ancillary systems, including:
    - sub-assembly and ancillary system installation sequence and techniques
    - optimum layout for conduits and ancillary components
    - types of securing devices and securing methods
    - types of shielding devices and shielding methods
    - procedures for checking fitting of sub-assemblies and ancillary systems
- post-assembly checking procedures, including:
    - checking and topping up fluid levels
    - engine pre-start checks, including:
        - abnormal noise
        - leaks
        - pressures
        - temperatures
    - measuring pressures, temperatures, noise and checking for leaks of components
    - checking correct operation of sub-assemblies and ancillary systems
- procedures for establishing vehicle baseline configuration
- procedures for installing springs and dampers and measuring and adjusting ride height and corner weight
- procedures for measuring and adjusting steering angles.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the competition vehicles that they have assembled and prepared for a motor sport event, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport repair workplace or simulated workplace
- two different motor sport competition vehicles
- sub-assemblies and ancillary components to be installed in competition vehicles
- controlling body rules, category rules and supplementary regulations for the motor sport event
- personal and motor sport team safety procedures and requirements, including PPE
- tools, equipment and material for assembling and preparing a competition vehicle.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTA103 Determine material suitability for competition vehicle components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to determine material suitability for constructing competition vehicle components. It involves determining component performance specifications, researching component operating environments, establishing material specifications for the components, and testing material suitability. It involves producing new components from a design as well as producing existing components from new material.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish component performance specifications	1.1 Determine component specifications from performance specifications 1.2 Establish component operating environment 1.3 Confirm component operating function 1.4 Prepare component performance specifications
2. Establish material performance specifications	2.1 Confirm material operating function 2.2 Identify and document criteria to be used in selection of

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ELEMENTS	PERFORMANCE CRITERIA
	material and in evaluation of outcomes 2.3 Access and interpret specifications for material 2.4 Consider and respond to legal and safety impacts of material chosen according to regulatory and team obligations and practices 2.5 Prepare and document material performance specifications to industry and team standards
3. Test material suitability against material performance specifications	3.1 Identify material capable of undertaking the required operating function 3.2 Select proposed material following identification, consideration and evaluation of full range of available options 3.3 Select or construct material to component specifications, according to manufacturer specifications, workplace procedures and safety requirements 3.4 Develop selected option, including material choices and processes, in detail and validate progressively against established criteria 3.5 Test material against material performance specifications 3.6 Identify causes of material failure as required 3.7 Document testing procedures and results
4. Test component suitability against component performance specifications	4.1 Determine component test procedures 4.2 Test component against component performance specifications according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.3 Document testing procedures and results

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Adapts procedures to different vehicles, components and materials.
Numeracy	• Interprets numbers and units of measurement of material specifications and testing equipment.
Oral communication	• Clarifies instructions and material requirements, report

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SKILL	DESCRIPTION
	findings, and make recommendations regarding material suitability.
Reading	• Interprets team instructions and procedures and controlling body rules, category rules and supplementary regulations • Interprets information from material manufacturer specifications.
Writing	• Documents material selection criteria and performance specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Self-management	• Works efficiently with minimal supervision.
Technology	• Operates specialised material testing equipment.

Unit Mapping Information

Supersedes and is equivalent to AURMTA003 Determine material suitability for competition vehicle components.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTA103 Determine material suitability for competition vehicle components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine material suitability for at least two different competition vehicle components of which:
  - at least one component must be made of metal
  - at least one component must be made of a composite material.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to determine material suitability for competition vehicle components, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to determine material suitability for competition vehicle components, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to determining material suitability for competition vehicle components, including procedures for:

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    - following equipment and system isolation requirements
    - selecting and using personal protective equipment (PPE)
    - methods of panel creation
- key requirements of regulatory body and category rules and their impact on component supplier specifications
- performance specifications for components, including:
    - design, quality, material, equipment and required quantities allowable in regulatory body and category rules, event
        - regulatory body and category rules
        - event supplementary regulations
        - component supplier specifications
        - team instructions
- types of materials suitable for competition vehicle components, including:
    - metals and alloys
    - plastics
    - fibreglass
    - carbon
    - Kevlar
- properties of material suitable for competition vehicle components, including:
    - molecular structure of material
    - physical properties of fabrication material and material composites
    - chemical properties of fabrication material and material composites
    - mechanical properties of fabrication material and material composites
- material treatment processes
- causes of material degradation
- testing result documentation, including:
    - recommendations for material use
    - recommendations for component use
- material and component testing procedures, including:
    - destructive
    - non-destructive.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the material that they have tested to determine its suitability for competition vehicle components, e.g. work order.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport workplace or simulated workplace
- workplace instructions
- customer requirements, organisational procedures, safety procedures and regulations
- competition vehicles requiring components specified in the performance evidence
- material, testing equipment and fabrication equipment for the two different competition vehicle components specified in the performance evidence
- tools and equipment appropriate for determining material suitability for competition vehicle components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTA104 Prepare competition vehicles at motor sport events

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to perform competition vehicle preparations at a motor sport event. It involves preparing for the task, interpreting category and event team specifications, finalising technical preparations, conducting pre-race checks and post-race maintenance, and preparing a vehicle for scrutineering.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Determine job requirements from event information and check against ‘on the day’ operating conditions, and seek required clarification of specifications 1.2 Select and check tools and equipment for serviceability 1.3 Identify hazards associated with the work and manage risks 1.4 Clean work area and lay out for job requirements
2. Finalise technical preparation	2.1 Configure vehicle settings for each race 2.2 Report problems with work area or operation of equipment to persons according to team procedures as required 2.3 Propose modifications or adaptation of equipment as required according to team procedures

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ELEMENTS	PERFORMANCE CRITERIA
	2.4 Document vehicle settings according to team procedures
3. Conduct pre-race checks	3.1 Carry out checks according to team checklists and without causing damage to components 3.2 Report problems with components or systems as required to persons according to team procedures
4. Prepare vehicle for scrutineering	4.1 Inspect vehicle systems and safety components according to regulatory body requirements, category rules and supplementary regulations 4.2 Identify and rectify problems with vehicle compliance according to team procedures as required 4.3 Report problems with vehicle compliance that cannot be rectified to persons according to team procedures as required
5. Conduct between-race maintenance	5.1 Inspect condition of components and systems according to team checklist, and repair or replace as required according to safety requirements and team procedures 5.2 Clean and refuel vehicle according to team procedures and safety and environmental requirements 5.3 Collect and log vehicle manual and electronic data according to team procedures 5.4 Conduct driver or rider technical debrief according to team procedures
6. Complete work processes	6.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 6.2 Clear work area and dispose of or recycle materials according to workplace procedures 6.3 Complete team and event documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Applies team procedures to different situations and motor sport events.
Numeracy	• Measures components and uses basic addition, subtraction, division and multiplication, to calculate tolerances and

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SKILL	DESCRIPTION
	clearances • Uses basic mathematical operations to calculate volume and area.
Reading	• Interprets team instructions, team checklists, regulatory body requirements, category rules and supplementary regulations.
Planning and organising	• Ensures that own tasks are carried out within team operation timeframes.
Problem solving	• Proposes modifications or adaptation of equipment to overcome preparation issues • Proposes possible solutions to compliance issues.
Self-management	• Works efficiently with minimal supervision.
Technology	• Navigates computer software and accesses and logs manual and electronic data.

Unit Mapping Information

Supersedes and is equivalent to AURMTA004 Perform competition vehicle preparation procedures at motor sports events.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTA104 Prepare competition vehicles at motor sport events

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare a different competition vehicle for at least two different motor sport events, one of which may be a simulated event.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to prepare competition vehicles at motor sport events, including:
  - information provided by customer and supervisors
  - team instructions
  - manufacturer specifications and procedures or equivalent documentation
  - category rules and supplementary regulations, including:
    - allowable design
    - quality
    - material, equipment and quantities
- workplace procedures required to prepare competition vehicles at motor sport events, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- work health and safety (WHS) requirements relating to preparing competition vehicles at motor sport events, including procedures for:
    - selecting and using personal protective equipment (PPE)
    - using motor sport event safety equipment, including firefighting equipment
    - identifying acceptable tolerance levels for noise, heat and fumes
    - methods of panel creation and their processes
- environmental requirements, including procedures for trapping, storing and disposing of fluids and contaminants released during vehicle preparation
- technical preparation procedures, including procedures for configuring:
    - vehicle settings for individual events, including:
        - team specifications
        - baseline configurations
        - category rules and supplementary regulations
    - work area for individual events
- pre-race checking procedures
- vehicle scrutineering preparation procedures, including:
    - inspection techniques
    - regulatory body requirements, category rules and supplementary regulations
    - non-compliance rectification procedures
- between-race maintenance procedures, including:
    - inspection procedures
    - gear ratio calculations
    - cleaning and re-fuelling procedures
    - vehicle manual and electronic data collection and logging procedures
    - procedures for reporting and recording equipment and component defects
    - procedures for driver or rider technical debriefings
- post-race clean-up procedures, including:
    - work area and vehicle cleaning procedures
    - tool and equipment checking and storage procedures
- procedures for processing team and event documentation.

Assessment Conditions

Competency is to be assessed in the workplace, for one sanctioned event.

Other competencies are to be assessed in an automotive repair workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the competition vehicles that they have prepared, e.g. work order.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two motor sport events, including one sanctioned event
- controlling body rules, category rules and supplementary regulations for the motor sport event
- personal and motor sport team safety procedures and requirements, including PPE
- two different motor sport competition vehicles
- tools, equipment and materials appropriate for preparing competition vehicles at a motor sport event.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURMTA109 Collect and log motor sport data

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to collect and log motor sport data. It involves identifying data requirements, preparing for the task, collecting, logging, and evaluating data, and completing workplace documentation.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify motor sport data collection requirement	1.1 Determine job requirements from workplace instructions 1.2 Determine data specific requirements from team instructions and procedures and controlling body rules, category rules and supplementary regulations 1.3 Identify purpose and end users of data 1.4 Identify sources of data
2. Prepare resources for data collection	2.1 Develop checklists and recording sheets according to team procedures 2.2 Prepare manual instruments for data collection 2.3 Check electronic data acquisition system settings 2.4 Check and adjust equipment settings, calibration and system according to task requirements and equipment manufacturer

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ELEMENTS	PERFORMANCE CRITERIA
	instructions 2.5 Conduct trial runs to check equipment and procedures and make required adjustments
3. Collect data	3.1 Carry out data acquisition system start-up procedure according to manufacturer procedures 3.2 Operate data acquisition system according to its designed capacity and purpose and to manufacturer specifications and safety requirements 3.3 Determine potential for inaccurate results arising from variables 3.4 Check data for accuracy according to manufacturer specifications 3.5 Report problems with required data or operation of equipment to persons as required
4. Log data	4.1 Import selected data into data analysis software according to manufacturer procedures 4.2 Evaluate data for preliminary indication of non-conformity and trends or patterns 4.3 Collate findings from data and report to persons according to team procedures 4.4 Store data for later retrieval according to team procedures
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Adapts to different race event conditions and vehicles.
Numeracy	• Uses basic mathematical operations, including addition and subtraction, to calculate and compare numerical information with expected values.

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SKILL	DESCRIPTION
Reading	• Determines data requirements from team instructions and procedures and controlling body rules, category rules and supplementary regulations • Interprets data acquisition system and data analysis software operating procedures from manufacturer instructions.
Technology	• Operates computer-based data acquisition systems and data analysis software • Connects and disconnects data acquisition system to vehicle without causing damage.

Unit Mapping Information

Supersedes and is equivalent to AURMTA009 Collect and log motor sport data.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTA109 Collect and log motor sport data

Modification History

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Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- collect and log data at two different motor sport events, including at least one sanctioned motor sport event
- use both manual and electronic systems at each of the above events
- collect the following types of data at each of the above events:
  - vehicle data
  - weather data
  - circuit data
  - driver or rider characteristics.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to collect and log motor sport data, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - controlling body rules, category rules and supplementary regulations
  - computer-based data and data analysis software
- workplace procedures required to collect and log motor sport data, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to collecting and logging motor sport data, including procedures for:
    - identifying hazards and managing risks
    - identifying acceptable tolerance levels for noise, heat and fumes
- motor sport data acquisition systems, including:
    - types, characteristics, components, uses and limitations
    - types of motor sport data, including data irregularities and tolerance levels
    - end users of motor sport data
    - manual data collection and logging methods
    - electronic data collection and logging methods
- types of data analysis software, including:
    - methods of importing data and performing preliminary data evaluation
    - methods of collating, reporting and recording data findings
- data acquisition system inspection, maintenance and system check procedures, including:
    - checks for function
    - checks for accuracy
    - checks for efficiency.

Assessment Conditions

Competency is to be assessed in the workplace, for one sanctioned event.

Other competencies are to be assessed in an automotive repair workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motor sport data they have collected and logged, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two different motor sport events, including one sanctioned event
- motor sport vehicle
- manual motor sport data acquisition system, including:
    - stopwatches
    - tyre pyrometer
    - weather station
- electronic motor sport data acquisition system, including data analysis software.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURMTE101 Test engines using a dynamometer

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to test engines using a dynamometer. The engines being tested may be in a vehicle or stand alone. It involves preparing for the task, selecting the correct test procedure, carrying out testing, analysing test results, and completing workplace processes and documentation. It involves setting up and conducting dynamometer tests on engines, and logging, analysing and reporting the test data in order to maximise engine performance.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for dynamometer operation	1.1 Determine job requirements from test information 1.2 Check dynamometer for calibration and serviceability according to manufacturer and workplace procedures 1.3 Select and check tools, equipment and materials for serviceability 1.4 Identify hazards associated with the work and manage risks according to safety and environmental requirements 1.5 Check engine or vehicle prior to testing according to manufacturer and workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.6 Check and secure engine or vehicle connections to dynamometer according to manufacturer, workplace and safety procedures
2. Conduct dynamometer testing	2.1 Determine required load and run sequence and test parameters 2.2 Carry out selected dynamometer testing sequence according to manufacturer and team procedures and safety requirements, and document data 2.3 Calculate correction factors and apply to data
3. Analyse test results	3.1 Analyse dynamometer test data and draw conclusions about condition and performance of engine and associated systems according to manufacturer specifications and workplace procedures 3.2 Report findings based on dynamometer data according to workplace procedures 3.3 Test recommended engine modifications on dynamometer according to manufacturer and workplace procedures and safety requirements, and document data 3.4 Present data to team members according to workplace procedures
4. Complete work processes	4.1 Carry out dynamometer shutdown procedure according to manufacturer and workplace procedures and safety requirements 4.2 Disconnect engine from dynamometer according to manufacturer and workplace procedures 4.3 Check and maintain dynamometer and associated equipment according to workplace procedures 4.4 Check and store tools and equipment according to workplace procedures 4.5 Process workplace documentation, including dynamometer test results, according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Applies learning and processes to different situations.

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SKILL	DESCRIPTION
Numeracy	• Uses basic mathematical operations to complete measurements, calculate analytical requirements, calibrate testing equipment, and present test results.
Reading	• Identifies, organises and interprets technical information relating to engine dynamometer testing.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised equipment.

Unit Mapping Information

Supersedes and is equivalent to AURMTE001 Test engines using a dynamometer.

Links

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Assessment Requirements for AURMTE101 Test engines using a dynamometer

Modification History

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Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out dynamometer testing on at least two different engines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to test engines using a dynamometer, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - test information and workplace instructions, including:
    - category regulations and component supplier specifications, including allowable quality, materials, equipment and specifications
- workplace procedures required to test engines using a dynamometer, including:
  - establishing serviceability of tools and equipment
  - documentation procedures, including:
    - dynamometer test results
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to testing engines using a dynamometer, including procedures for:

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    - connecting and securing engines to dynamometers
    - dealing with exhaust gases from engines
    - dealing with high levels of noise
- environmental requirements, including procedures for trapping, storing and disposing of fluids released during engine testing
- application, purpose and operation of engine dynamometers, including associated hardware and software
- dynamometer testing parameters, including:
    - run-in period for new engines
- engine and chassis dynamometer testing procedures, including:
    - dynamometer preparation procedures
    - engine connection and securing procedures
    - vehicle connection and securing procedures
    - test environment correction factors
    - dynamometer data interpretation and analysis, including:
        - recommendations for engine configuration and/or modifications to improve performance
- required checks of engine and vehicle, including:
    - engine oil level and condition
    - cooling system condition and coolant level
    - exhaust extraction system connection
    - drive shaft condition and connection
- operator dynamometer maintenance procedures
- engine performance and dynamometer terminology.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engines that they have tested using a dynamometer, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- two different engines requiring testing using a dynamometer
- engine or chassis dynamometer

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- tools and equipment appropriate for connecting, securing and disconnecting engines to dynamometers.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURMTQ101 Analyse and repair faults in performance driveline systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to analyse and repair performance transmissions, final drive and drivelines, including engine to transmission drive couplings. It involves identifying, evaluating, selecting, justifying, documenting and carrying out the most appropriate rectification method or variation. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

The unit applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Motorsport Technical - Driveline and Final Drives

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Determine objective of analysis and evaluation from workplace instructions 1.2 Source and interpret specifications for driveline system 1.3 Identify, confirm and document system faults, deficiencies or discrepancies from direct and/or indirect evidence 1.4 Identify hazards associated with the work and manage risks according to safety and environmental requirements
2. Prepare for analysis and repairs	2.1 Develop or adopt evaluative criteria to meet the objective of the analysis and evaluation

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Develop or identify analytical and evaluative methodology from technical information 2.3 Identify possible causes of faults are identified from analysis of technical support information and available on-board diagnostic systems 2.4 Analyse diagnostic options and select those most appropriate to the circumstances according to evaluative criteria 2.5 Select and prepare test equipment according to manufacturer procedures and team requirements 2.6 Select and check tools and materials required to support the diagnostic process for serviceability 2.7 Prepare vehicle driveline system and components for the diagnostic process
3. Carry out analysis and determine repairs and performance enhancement strategies	3.1 Follow selected analytical and evaluative methodology according to manufacturer and workplace procedures 3.2 Carry out tests according to manufacturer and workplace procedures and safety and environmental requirements 3.3 Verify analytical and other diagnostic findings, as required, by using available alternative or optional processes 3.4 Assess analytical findings and results against the evaluative criteria 3.5 Draw valid conclusions from the available evidence and document to workplace requirements 3.6 Determine options for responding to the analysis and evaluation objective from further research of technical support information 3.7 Select and document repair or modification method from an analysis of the options, operating conditions, controlling body rules, category rules, and financial implications
4. Conduct repairs and implement performance improvement strategies	4.1 Select and prepare repair tools and materials 4.2 Carry out repairs and component replacements and adjustments according to manufacturer specifications, team requirements, and safety and environmental requirements, and without causing damage to other components or systems 4.3 Carry out post-repair testing and vehicle start-up to ensure performance and operation are to team requirements
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Measures system components and uses basic mathematical operations, including addition and subtraction • Calculates deviations and tolerances from manufacturer specifications • Interprets units of measurement of angles and torque.
Reading	• Interprets controlling body rules, category rules and supplementary regulations • Interprets information from manufacturer and workshop literature when seeking driveline system specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURMTQ001 Analyse and repair faults performance driveline systems.

Links

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Assessment Requirements for AURMTQ101 Analyse and repair faults in performance driveline systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out the analysis, repair and post-repair checks on at least two different competition vehicles with performance driveline system faults, including:
  - gear selection
  - noise
  - vibration
  - harsh engagement
  - slipping.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to analyse and repair faults in performance driveline systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to analyse and repair faults in performance driveline systems, including:
  - establishing serviceability of tools and equipment
  - documentation and reporting procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- work health and safety (WHS) requirements relating to analysing and repairing faults in performance driveline systems, including procedures for:
    - working with hot oils
    - working with rotating driveline components
    - methods of creating and repairing panels
- environmental requirements, including procedures for trapping, storing and disposing of oils released from driveline components
- analytic and evaluative methodology used to repair faults in performance driveline systems, including:
    - diagnostic process, sequence, tests, and testing equipment
- types and key features of performance transmission, final drive and driveline components, including:
    - manual transmissions
    - automatic transmissions
    - drive shafts
    - final drives
    - drive axles
- diagnostic testing procedures of performance driveline systems, including:
    - noise and vibration analysis
    - road testing procedures
    - scan tool and data logger
- procedures for identifying the causes of faults, including intermittent faults
- procedures for the repair and improvement of performance driveline systems, including:
    - driveline component dismantling, cleaning, repair and reassembly procedures
    - driveline component replacement and adjustment procedures
- post-repair testing procedures of performance driveline systems, including gear selection.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the performance driveline systems that they have analysed and repaired, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- manufacturer specifications for vehicle performance driveline systems

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- two different competition vehicles with faults in their performance driveline systems
- diagnostic equipment for performance driveline systems
- tools, equipment and materials appropriate for analysing and repairing performance driveline systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURNTB101 Diagnose and repair forklift hydraulic braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the hydraulic braking systems of forklift machinery. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Lifting Equipment Technical – Brakes

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair forklift hydraulic braking system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose forklift hydraulic braking system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair forklift hydraulic braking system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures hydraulic braking system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Operates diagnostic and testing equipment • Conducts performance testing of components, systems and equipment

Unit Mapping Information

Supersedes and is equivalent to AURNTB001 Diagnose and repair forklift hydraulic braking systems.

Links

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Assessment Requirements for AURNTB101 Diagnose and repair forklift hydraulic braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two of the following types of forklift hydraulic braking systems:
  - drum bake system
  - dry disc brake system
  - wet multi-plate disc brake system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair forklift hydraulic braking systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair forklift hydraulic braking systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing forklift hydraulic braking systems, including procedures for:
  - working with brake dust and hydraulic oil hazards
  - using lifting, jacking and supporting equipment
- environmental requirements relating to diagnosing and repairing forklift hydraulic braking systems, including procedures for trapping, storing and disposing of brake dust and brake fluid released from hydraulic braking systems
- operating principles of forklift hydraulic braking systems, including:
  - levers
  - friction
  - hydraulics, including the relationship between force, pressure and area
  - properties of brake fluids, including:
    - Department of Transportation (DOT) classification
    - synthetic and non-synthetic
    - compatibility of fluid types
- purpose and operation of forklift hydraulic braking systems and components, including:
  - power assisted systems, including:
    - drum brake systems
    - dry disc brake systems
    - wet multi-plate disc systems
    - parking brake systems
    - master cylinders
    - braking system valves and switches
    - brake boosting systems
  - full hydraulic systems, including:
    - wet multi-plate disc systems
    - parking brake systems
    - braking system valves and switches
    - oil pump and cooler
- diagnostic testing procedures for forklift hydraulic braking systems, including procedures for:
  - checking brake pedal
  - operational tests of brake booster
  - operational tests of master cylinder
  - testing brake fluid
  - parking brake operational tests
  - drum, dry disc and wet multi-plate disc brake operational tests
  - measuring and evaluating brake drums, shoes, discs and pads
- repair procedures for forklift hydraulic braking systems, including procedures for removing, replacing and adjusting:
  - hydraulic system components

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  - braking system components
- post-repair testing procedures for forklift hydraulic braking systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the forklift hydraulic braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer forklift hydraulic braking system specifications
- operational forklifts with faults in two different braking systems
- diagnostic equipment for forklift hydraulic braking systems
- tools, equipment and materials appropriate for repairing and adjusting forklift hydraulic braking systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURNTD101 Diagnose and repair forklift hydrostatic steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the hydrostatic steering systems of forklift machinery. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical – Lifting Equipment Technical – Steering and Suspension

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair forklift hydrostatic steering system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose forklift hydrostatic steering system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair forklift hydrostatic steering system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures hydrostatic steering system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Interprets steering system hydraulic pressure gauges.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Operates diagnostic and testing equipment • Conducts performance testing of components, systems and equipment

Unit Mapping Information

Supersedes and is equivalent to AURNTD001 Diagnose and repair forklift hydrostatic steering systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURNTD101 Diagnose and repair forklift hydrostatic steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least three of the following forklift hydrostatic steering system components:
  - king pin assembly
  - steering control unit
  - hydraulic valves
  - pump
  - steering column
  - hydraulic cylinders.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair forklift hydrostatic steering systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair forklift hydrostatic steering systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing forklift hydrostatic steering systems, including procedures for:
    - working with high pressure fluid hazards
    - using lifting, jacking and supporting equipment
- environmental requirements relating to diagnosing and repairing forklift hydrostatic steering systems, including procedures for trapping, storing and disposing of hydraulic fluids released from hydrostatic steering systems
- operating principles of forklift hydrostatic steering systems, including full hydraulic steering
- purpose and operation of forklift hydrostatic steering systems and components, including:
    - king pin assembly
    - steering control unit
    - hydraulic valves
    - pump
    - steering column
    - hydraulic cylinders
- diagnostic testing procedures for forklift hydrostatic steering systems, including:
    - pressure and flow testing the system and individual components
    - system operation analysis
    - component wear analysis
- repair procedures for forklift hydrostatic steering systems, including procedures for removing, replacing and adjusting the systems
- post-repair testing procedures for forklift hydrostatic steering systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the forklift hydrostatic steering systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer forklift hydrostatic steering system specifications

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- operational forklifts with faults in the hydrostatic steering system components specified in the performance evidence
- diagnostic equipment for forklift hydrostatic steering systems
- tools, equipment and materials appropriate for repairing and adjusting forklift hydrostatic steering systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURPTA101 Carry out pre-repair operations to outdoor power equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to prepare and clean outdoor power equipment prior to repair or storage. The unit involves preparing for the task, cleaning and tagging equipment for repair or storage, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. The equipment includes lawn mowers, chainsaws, pumps, post hole borers, portable generators, stationary engines, brush cutters, leaf blowers or other outdoor power equipment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to undertake pre-repair operations	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for pre-repair activity 1.3 Select and analyse cleaning options 1.4 Identify and manage risks and hazards associated with the work 1.5 Select tools, equipment and materials and check for serviceability

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ELEMENTS	PERFORMANCE CRITERIA
2. Clean and tag equipment prior to repair or storage	2.1 Clean equipment according to manufacturer specifications, workplace procedures, safety and environmental requirements, and without causing damage to equipment or systems 2.2 Tag equipment and prepare for further repair procedures and treat with rust prevention material for storage as required 2.3 Dispose of used cleaning materials and waste safely according to manufacturer specifications, workplace procedures and safety and environmental requirements
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition and subtraction, calculates chemical mixing volumes and proportions from manufacturer specifications.
Oral communication	• Clarifies instructions.
Reading	• Interprets instructions from cleaning agent information • Interprets cleaning equipment operating procedures.
Writing	• Fills out component identification tags.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Operates specialised equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURPTA001 Carry out pre-repair operations to outdoor power equipment.

Links

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Assessment Requirements for AURPTA101 Carry out pre-repair operations to outdoor power equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out pre-repair operations to at least three of the following pieces of outdoor power equipment:
  - lawn mower
  - chainsaw
  - pump
  - post hole borer
  - post hole digger
  - stationary engine
  - brush cutter
  - leaf blower.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out pre-repair operations to outdoor power equipment, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to carry out pre-repair operations to outdoor power equipment, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to carrying out pre-repair operations, including procedures for:
    - operating cleaning equipment
    - using hazardous chemicals
    - selecting and using personal protective equipment (PPE), including safety glasses, gloves and protective clothing
- environmental requirements, including procedures for trapping, storing and disposing of cleaning agents and residue released during the cleaning process
- identification and operation of cleaning equipment, including:
    - steam cleaning
    - high pressure washing
    - manual washing
    - sand or bead blasting
- chemical cleaning agents, including:
    - dewaxing, detergents, degreasers and special purpose agents
    - rust prevention
- material cleaning procedures, techniques and materials appropriate to the job requirement
- types and application of cleaning agents
- tagging and storage procedures for cleaned outdoor power equipment.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the outdoor power equipment that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer cleaning agent specifications
- area and equipment, including PPE, for safe cleaning of equipment
- three different pieces of outdoor power equipment for pre-repair operations as specified in the performance evidence

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- tools, equipment and materials appropriate for carrying out pre-repair operations on outdoor power equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURPTA102 Carry out minor adjustments to outdoor power equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to carry out minor adjustments to outdoor power equipment. The unit involves preparing for the task, inspecting and carrying out minor adjustments, and completing workplace processes and documentation.

The unit applies to those who work in the outdoor power equipment service and repair industry. The equipment includes lawn mowers, chainsaws, pumps, post hole borers, portable generators, stationary engines, brush cutters, leaf blowers or other outdoor power equipment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and adjust outdoor power equipment	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for inspection and adjustment activity 1.3 Identify hazards and manage risks associated with the work 1.4 Select tools, equipment and materials and check for serviceability
2. Inspect outdoor power equipment	2.1 Inspect outdoor power equipment according to manufacturer specifications, workplace procedures, and safety requirements

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Compare inspection results with manufacturer specifications 2.3 Report inspection findings according to workplace procedures, and recommendations for necessary repairs or adjustments 2.4 Obtain authorisation to proceed with service and repair in line with recommendations
3. Carry out minor adjustments	3.1 Select adjusting tools and equipment according to manufacturer specifications and workplace procedures 3.2 Carry out minor adjustments on outdoor power equipment according to manufacturer specifications, workplace procedures, and safety requirements, and without causing damage to components or systems 3.3 Carry out post-adjustment testing according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition and subtraction, adjusting equipment to manufacturer specifications • Interprets gauges and test equipment.
Oral communication	• Clarifies instructions.
Reading	• Interprets information from manufacturers and workshop literature and seeks minor adjustment specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.

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SKILL	DESCRIPTION
Technology	• Operates specialised tools and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURPTA002 Carry out minor adjustments to outdoor power equipment.

Links

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Assessment Requirements for AURPTA102 Carry out minor adjustments to outdoor power equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out minor adjustments to at least two of the following pieces of outdoor power equipment:
  - lawn mower
  - chainsaw
  - line trimmer
  - mulcher
  - pump
  - post hole borer
  - portable generator
  - stationary engine
  - brush cutter
  - leaf blower.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out minor adjustments to outdoor power equipment, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to carry out minor adjustments to outdoor power equipment, including:
  - establishing serviceability of tools and equipment
  - documentation procedures

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    - housekeeping procedures, including:
        - examination of tools and equipment
        - storage of equipment
        - identification, tagging and isolation of faulty equipment
        - disposal of excess materials
        - recycling procedures
- work health and safety (WHS) requirements relating to carrying out minor adjustments to outdoor power equipment, including:
    - selecting and using personal protective equipment (PPE), including protective clothing, and hearing and eye protection
    - safely operating equipment to be adjusted
- identification and basic operation of the outdoor power equipment specified in the performance evidence
- inspection and adjustment procedures for outdoor power equipment, including engine high and low speed adjustments
- post-adjustment testing procedures for outdoor power equipment, including operating equipment through full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the outdoor power equipment that they have adjusted, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for outdoor power equipment
- area and equipment, including PPE, for minor adjustment of equipment
- outdoor power equipment specified in the performance evidence requiring minor adjustments
- tools, equipment and materials appropriate for carrying out minor adjustments to outdoor power equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURPTA103 Service and repair rotary cutting systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to service and repair faults in the rotary cutting systems of outdoor power equipment according to manufacturer specifications. The unit involves preparing for the task, determining the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. The rotary cutting systems include electric or internal combustion engine driven rotary mowers, lawn edgers, brush cutters, chippers or mulchers. This unit is for the service and repair of the rotary cutting system only and not the driving engine or motor.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to service and repair rotary cutting system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for service and repair activity 1.3 Identify hazards and manage risks according to workplace procedures 1.4 Select tools, equipment and materials and check for serviceability
2. Determine service and	2.1 Identify faults through inspection and identify causes

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ELEMENTS	PERFORMANCE CRITERIA
repair requirements of rotary cutting system	2.2 Report inspection findings and test results according to workplace procedures, and include recommendations for necessary service, repair or adjustment 2.3 Obtain authorisation to proceed with service and repair in line with recommendations
3. Carry out service and repair activities	3.1 Select and check tools, equipment and materials required to conduct service and repair 3.2 Remove and inspect components for serviceability according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Fit and adjust reusable, repaired and replacement components according to manufacturer specifications and workplace procedures
4. Check rotary cutting system for normal operation	4.1 Operate system and compare to manufacturer specifications 4.2 Adjust and re-test rotary cutting system as required
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Measures rotary cutting system components and uses basic mathematical operations, including addition and subtraction • Calculates deviations and tolerances from manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Interprets information from manufacturer and workshop literature when seeking rotary cutting system service and repair procedures and specifications.

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SKILL	DESCRIPTION
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment

Unit Mapping Information

Supersedes and is equivalent to AURPTA003 Service and repair rotary cutting systems.

Links

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Assessment Requirements for AURPTA103 Service and repair rotary cutting systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service and repair at least three of the following rotary cutting systems:
  - rotary mower
  - lawn edger
  - brush cutter
  - chipper
  - mulcher.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to service and repair rotary cutting systems:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to service and repair rotary cutting systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) relating to servicing and repairing rotary cutting systems, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - working with electrical systems
  - working with rotating cutting system
  - checking protective guards, cowlings and safety features
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from rotary cutting systems
- types of lubricants, and their application and methods of lubrication
- application, and key features of rotary cutting systems, including the electric or internal combustion engine driven systems specified in the performance evidence
- inspection, servicing and adjustment procedures for rotary cutting systems, including:
  - cutting blades and attachments
  - cutting deck housing
  - blade mounting
  - wheels
  - drive systems
- repair procedures for rotary cutting systems, including removal, replacement and adjustment procedures for components, including:
  - cutting blades and attachments
  - cutting deck housing
  - blade mounting
  - wheels
  - drive systems
- post-repair testing procedures for rotary cutting systems, including operating system through full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the rotary cutting systems that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for rotary cutting systems

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- area and equipment, including PPE, required to safely test rotary cutting systems
- three different rotary cutting systems requiring service and repair
- tools, equipment and materials appropriate for inspecting, servicing and repairing rotary cutting systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURPTA104 Service and repair drum cutting systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to service and repair faults in the drum cutting systems of outdoor power equipment according to manufacturer specifications. The unit involves preparing for the task, determining the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the outdoor power equipment service and repair industry. The drum cutting systems include push type, electric or internal combustion powered systems, and include reel mowers or gang mowers. This unit relates to the service and repair of the drum cutting system only and not the driving engine or motor.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to service and repair drum cutting system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for service activity 1.3 Identify and manage hazards associated with the tasks 1.4 Select tools, equipment and materials and check for serviceability

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ELEMENTS	PERFORMANCE CRITERIA
2. Determine service and repair requirements of drum cutting system	2.1 Inspect and test system according to manufacturer specifications, workplace procedures, and safety requirements 2.2 Identify faults through inspection and identify causes 2.3 Report inspection findings and test results according to workplace procedures, and include recommendations for necessary service, repair or adjustment 2.4 Obtain authorisation to proceed with service and repair in line with recommendations
3. Carry out service and repair activities	3.1 Select and check tools, equipment and materials required to conduct service and repair 3.2 Remove and inspect components for serviceability according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Fit and adjust reusable, repaired and replacement components according to manufacturer specifications and workplace procedures
4. Check drum cutting system for normal operation	4.1 Operate system and compare to manufacturer specifications 4.2 Make adjustments as required and re-test drum cutting system
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Calculates deviations and tolerances from manufacturer specifications using basic mathematical skills.
Reading	• Interprets information from manufacturer and workshop literature when seeking drum cutting system specifications and procedures.
Planning and organising	• Plans own work requirements

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SKILL	DESCRIPTION
	• Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised equipment.

Unit Mapping Information

Supersedes and is equivalent to AURPTA004 Service and repair drum cutting systems.

Links

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Assessment Requirements for AURPTA104 Service and repair drum cutting systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service and repair two different drum cutting systems, including at least two of the following systems:
  - push type single reel
  - motorised single reel
  - gang (multi-reel)
- service and repair all of the following in the course of the above:
  - cutting blades and attachments
  - blade mounting
  - drive system
  - wheels.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to service and repair drum cutting systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to service and repair drum cutting systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to servicing and repairing drum cutting systems, including procedures for:
    - selecting and using personal protective equipment (PPE)
    - working with electrical systems
    - working with drum cutting systems
    - checking protective guards, cowlings and safety features
- environmental requirements, including procedures for trapping, storing and disposing of lubricating oils released from drum cutting systems
- application, and key features of drum cutting systems, including push type, electric and internal combustion powered systems, including:
    - reel mowers
    - gang (multi-reel) mowers
    - types of lubricants, and their application and methods of lubrication
- service and repair procedures for drum cutting systems, including:
    - grinding, adjusting and aligning cutting blades
    - aligning cutter housing
    - adjusting cutting blade mounting and attachments
    - analysing wear of drive system
- post-repair testing procedures for drum cutting systems, including requirements for operating system through full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the drum cutting systems that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for drum cutting systems
- area and equipment, including PPE, required to safely test drum cutting systems
- two different drum cutting systems as specified in the performance evidence requiring service and repair

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- tools, equipment and materials appropriate for inspecting, servicing and repairing drum cutting systems, including specialised blade grinding equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURPTA105 Service and repair chainsaw cutting systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to service and repair faults in the chainsaw cutting systems of outdoor power equipment according to manufacturer specifications. The unit involves preparing for the task, determining the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. The chainsaw cutting systems include those of electric, cordless and hydraulic or petrol-powered systems, or pole saws.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to service and repair chainsaw cutting system	1.1 Identify job requirements from workplace instructions 1.2 Source and interpret workplace service and repair procedures 1.3 Identify and manage hazards associated with the tasks 1.4 Select tools and equipment and check for serviceability
2. Determine service and repair requirements of chainsaw cutting system	2.1 Inspect chainsaw cutting system and test according to manufacturer specifications, workplace procedures, and safety requirements 2.2 Identify faults through inspection and identify causes

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Report inspection findings and test results according to workplace procedures, and include recommendations for necessary service, repair or adjustment 2.4 Obtain authorisation to proceed with service and repair in line with recommendations
3. Carry out service and repair activities	3.1 Determine service and repair options and select appropriate methods 3.2 Select and inspect tools, equipment and materials 3.3 Remove components and inspect for serviceability according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.4 Fit and adjust reusable, repaired and replacement components according to manufacturer specifications and workplace procedures
4. Check chainsaw cutting system for normal operation	4.1 Operate and compare system to manufacturer specifications according to workplace procedures and safety requirements 4.2 Adjust chainsaw cutting system as required and re-test system
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Calculates deviations and tolerances from manufacturer specifications using basic mathematical skills.
Reading	• Interprets information from manufacturer and workshop literature when seeking chainsaw cutting system specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.

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SKILL	DESCRIPTION
Technology	• Uses specialised equipment.

Unit Mapping Information

Supersedes and is equivalent to AURPTA005 Service and repair chainsaw cutting systems.

Links

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Assessment Requirements for AURPTA105 Service and repair chainsaw cutting systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service and repair at least three different chainsaw cutting systems, including:
  - at least two service and repair jobs that involve sharpening saw chains
  - at least one service and repair job that involves fabricating and replacing a saw chain and refurbishing or replacing a guide bar.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to service and repair chainsaw cutting systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to service and repair chainsaw cutting systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to servicing and repairing chainsaw cutting systems, including procedures for:
  - starting and checking operation of chainsaw cutting system

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    - adjusting and aligning chainsaw cutting system components
    - operating chain brake
    - selecting and using personal protective equipment (PPE)
    - handling and operating chainsaw, including chain brake
- workplace procedures, including for:
    - obtaining authorisation to service and repair
    - checking tools and equipment
    - managing risks
    - reporting inspection findings
    - processing workplace documentation
- environmental requirements, including procedures for trapping, storing and disposing of lubricating oils released from chainsaw cutting systems
- application, and key features of chainsaw cutting systems, including:
    - saw chain types and mounting bar
    - drive system and sprocket
    - chain brake and overload devices
    - protective guards and cowlings
    - manual and automatic lubrication systems
    - chain adjusting systems
    - clutch drum assembly
- service and repair procedures for chainsaw cutting systems, including:
    - chain and mounting bar
    - drive system and sprocket
    - chain brake and overload devices
    - protective guards and cowlings
    - manual and automatic lubrication systems
    - chain adjusting systems
    - clutch drum assembly
- types of lubricants, and their application and methods of lubrication
- post-repair testing procedures for chainsaw cutting systems, including operating system through full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the chainsaw cutting systems that they have serviced and repaired, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for chainsaw cutting systems
- area and equipment, including PPE, required to safely test chainsaw cutting systems
- three different chainsaw cutting systems requiring service and repair
- tools, equipment and materials appropriate for inspecting, servicing and repairing chainsaw cutting systems, including:
  - sharpening equipment
  - saw chain
  - equipment stands and vices
  - grinders
  - chain breaking and riveting equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURPTA106 Inspect and service line trimming systems and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service line trimming systems and components according to manufacturer instructions. The unit involves preparing for the task, inspecting the system and components, reporting the inspection findings, servicing and adjusting the system and components, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. The line trimming systems include brush cutters and grass trimmers which may be electric, or petrol driven, stand-alone or fitted to other equipment systems.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service line trimming system of outdoor power equipment	1.1 Identify job requirements from workplace instructions 1.2 Source and interpret workplace service and repair procedures 1.3 Identify and manage hazards associated with the tasks 1.4 Select tools and equipment and check for serviceability
2. Inspect line trimming system	2.1 Inspect and test line trimming system according to manufacturer specifications, workplace procedures and safety requirements

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Compare inspection results with manufacturer specifications 2.3 Report inspection findings according to workplace procedures, including recommendations for necessary repairs or adjustments 2.4 Obtain authorisation to proceed according to workplace procedures
3. Service line trimming system	3.1 Select service options according to manufacturer maintenance schedule and lubrication charts 3.2 Carry out service and adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.3 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Measures line trimming system components • Calculates deviations and tolerances from manufacturer specifications using basic mathematical skills.
Oral communication	• Clarifies instructions.
Reading	• Interprets information from manufacturer and workshop literature when seeking line trimming system specifications and procedures.

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Unit Mapping Information

Supersedes and is equivalent to AURPTA006 Inspect and service line trimming systems and components.

Links

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Assessment Requirements for AURPTA106 Inspect and service line trimming systems and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service one of each of the following line trimming systems:
  - auto line feed system
  - manual line feed system
  - bent and straight shaft systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service line trimming systems and components, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service line trimming systems and components, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to inspecting and servicing line trimming systems and components, including procedures for:

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  - starting and operating line trimming equipment
  - adjusting and aligning line trimming systems
  - using personal protective equipment (PPE) relevant to operating line trimmers
- application, and key features of line trimming systems, including:
  - overload protection
  - line sizes and types
  - auto and manual line feed systems
  - metal and composite blades
  - handles and harnesses
  - brush cutter angle drives
  - bent and straight shafts
  - protective guards and cowlings
  - stand-alone or fitted to other equipment systems
- types and application of lubricants, and lubricating methods
- inspection procedures for line trimming systems and components, including:
  - analysing component wear
  - checking bearings and housing condition
  - checking automatic and manual line feed systems
  - checking physical damage to protective guards and cowlings
- service and adjustment procedures for line trimming systems and components, including:
  - lubricating bent and straight shaft drive systems
  - testing automatic and manual line feed systems
  - testing overload devices
  - post-repair testing and re-testing procedures for line trimming systems and components, including operating line trimming system through full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the line trimming systems and components that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer line trimming specifications

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- outdoor power equipment line trimming system and components specified in the performance evidence and requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing line trimming systems and components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURPTA107 Service and repair post boring systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to service and repair faults in the post boring systems of outdoor power equipment according to manufacturer specifications. The unit involves preparing for the task, determining the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. The post boring systems may be stand-alone, or chainsaw attached, and petrol powered or electric powered.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to service and repair post boring system	1.1 Identify job requirements from workplace instructions 1.2 Source and interpret workplace service and repair procedures 1.3 Identify and manage hazards associated with the tasks 1.4 Select tools and equipment and check for serviceability
2. Determine service and repair requirements of post boring system	2.1 Inspect and test system according to manufacturer specifications, workplace procedures, and safety requirements 2.2 Identify faults and determine causes of faults 2.3 Report inspection findings and test results according to

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ELEMENTS	PERFORMANCE CRITERIA
	workplace procedures, and include recommendations for necessary service, repair or adjustment 2.4 Obtain authorisation to proceed according to workplace procedures
3. Carry out service and repair activities	3.1 Analyse service and repair options and select those most appropriate to the circumstances 3.2 Select and check tools, equipment and materials 3.3 Remove components and inspect for serviceability according to manufacturer specifications, workplace procedures, and safety requirements 3.4 Fit and adjust reusable, repaired and replacement components according to manufacturer specifications and workplace procedures
4. Check post boring system for normal operation	4.1 Operate and compare system to manufacturer specifications according to workplace procedures and safety requirements 4.2 Make adjustments as required and re-test post boring system
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Calculates deviations and tolerances from manufacturer specifications using basic mathematical skills.
Reading	• Interprets information from manufacturer and workshop literature when seeking post boring system specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.

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Unit Mapping Information

Supersedes and is equivalent to AURPTA007 Service and repair post boring systems.

Links

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Assessment Requirements for AURPTA107 Service and repair post boring systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service and repair at least two different post boring systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to service and repair post boring systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to service and repair post boring systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to servicing and repairing post boring systems, including procedures for:
  - safely starting and checking operation, adjustment and alignment of post boring system
  - safely operating overload system
  - selecting and using personal protective equipment (PPE)

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- application, and key features of stand-alone or chainsaw attached post boring systems, including:
  - petrol powered
  - electric powered
- augers and drill bit types and their application
- service and repair procedures for post boring systems, including:
  - drive system gearbox
  - overload devices
  - protective guards and cowlings
  - handle assembly
  - lubrication systems
  - chuck assembly
  - augers and drill bits
  - clutch drum assembly
  - reversing system
  - post-repair testing procedures, including operating system through full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the post boring systems that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for post boring systems
- area and equipment, including PPE, required to safely test post boring systems
- two different post boring systems requiring service and repair
- tools, equipment and materials appropriate for inspecting, servicing and repairing post boring systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURPTA108 Service and repair post hole digging systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to service and repair faults in the post hole digging systems of outdoor power equipment according to manufacturer specifications. The unit involves preparing for the task, determining the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. The post hole digging systems may be powered by electric or internal combustion engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to service and repair post hole digging system	1.1 Identify job requirements from workplace instructions 1.2 Source and interpret workplace service and repair procedures 1.3 Identify and manage hazards associated with the tasks 1.4 Select tools and equipment and check for serviceability

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ELEMENTS	PERFORMANCE CRITERIA
2. Determine service and repair requirements of post hole digging system	2.1 Inspect and test system according to manufacturer specifications, workplace procedures, and safety requirements 2.2 Identify faults and determine causes of faults 2.3 Report inspection findings and test results according to workplace procedures, and include recommendations for necessary service, repair or adjustment 2.4 Obtain authorisation to proceed according to workplace procedures
3. Carry out service and repair activities	3.1 Analyse service and repair options and select those most appropriate to the circumstances 3.2 Select and check tools, equipment and materials 3.3 Remove components and inspect for serviceability according to manufacturer specifications, workplace procedures, and safety requirements 3.4 Fit and adjust reusable, repaired and replacement components according to manufacturer specifications and workplace procedures
4. Check post hole digging system for normal operation	4.1 Operate and compare system according to manufacturer specifications, workplace procedures and safety requirements 4.2 Make adjustments as required and re-test post hole digging system
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Calculates deviations and tolerances from manufacturer specifications using basic mathematical skills.
Reading	• Interprets information from manufacturer and workshop literature when seeking post hole digging system

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SKILL	DESCRIPTION
	specifications and procedure.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.

Unit Mapping Information

Supersedes and is equivalent to AURPTA008 Service and repair post hole digging systems.

Links

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Assessment Requirements for AURPTA108 Service and repair post hole digging systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service and repair at least two different post hole digging systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to service and repair post hole digging systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to service and repair post hole digging systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to servicing and repairing post hole digging systems, including procedures for:
  - safely starting and checking operation, adjustment and alignment of post hole digging system
  - safely operating overload system
  - selecting and using suitable personal protective equipment (PPE)

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- environmental requirements, including procedures for trapping, storing and disposing of lubricating oils and greases released from post hole digging systems
- application, and key features of post hole digging systems, including:
  - electric powered
  - engine powered
  - power take-off
- types of lubricants, and their application and methods of lubrication
- different types of augers and their applications, including:
  - tungsten
  - steel
- service and repair procedures for post hole digging systems, including:
  - drive system gearbox
  - reversing system
  - overload devices
  - protective guards and cowlings
  - handle assembly
  - lubrication systems
  - drilling spindle
  - augers
  - auger brake
  - clutch drum assembly
  - auger sharpening
- post-repair testing procedures for post hole digging systems, including operating system through full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the post hole digging systems that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for post hole digging systems
- area and equipment, including PPE, required to safely test post hole digging systems
- two different post hole digging systems requiring service and repair

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- tools, equipment and materials appropriate for inspecting, servicing and repairing post hole digging systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURPTA109 Service and repair reciprocating cutting systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to service and repair faults in the reciprocating cutting systems of outdoor power equipment according to manufacturer specifications. The unit involves preparing for the task, determining the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. The reciprocating cutting systems include hedge trimmers, tree loppers or power shears, which may be electric, or petrol driven.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to service and repair reciprocating cutting system	1.1 Identify job requirements from workplace instructions 1.2 Source and interpret workplace service and repair procedures 1.3 Identify and manage hazards associated with the tasks 1.4 Select tools and equipment and check for serviceability
2. Determine service and repair requirements of reciprocating cutting system	2.1 Inspect and test system according to manufacturer specifications, workplace procedures, and safety requirements 2.2 Identify faults and determine causes of faults 2.3 Report inspection findings and test results according to

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ELEMENTS	PERFORMANCE CRITERIA
	workplace procedures, and include recommendations for necessary service, repair or adjustment 2.4 Obtain authorisation to proceed according to workplace procedures
3. Carry out service and repair activities	3.1 Analyse service and repair options and select those most appropriate to the circumstances 3.2 Select and check tools, equipment and materials 3.3 Remove components and inspect for serviceability according to manufacturer specifications, workplace procedures, and safety requirements 3.4 Fit and adjust reusable, repaired and replacement components according to manufacturer specifications and workplace procedures
4. Check reciprocating cutting system for normal operation	4.1 Operate system and compare to manufacturer specifications according to workplace procedures and safety requirements 4.2 Make adjustments as required and re-test reciprocating cutting system
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Calculates deviations and tolerances from manufacturer specifications using basic mathematical skills • Interprets angles for sharpening cutting blades.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Interprets information from manufacturer and workshop literature when seeking reciprocating cutting system specifications and procedures.

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SKILL	DESCRIPTION
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised equipment.

Unit Mapping Information

Supersedes and is equivalent to AURPTA009 Service and repair reciprocating cutting systems.

Links

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Assessment Requirements for AURPTA109 Service and repair reciprocating cutting systems

Modification History

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Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service and repair at least three different reciprocating cutting systems, including at least one of each of the following:
  - double and single sided powered hedge trimmers
  - mechanical tree loppers.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy vehicle compression ignition engines, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to service and repair reciprocating cutting systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to servicing and repairing reciprocating cutting systems, including:

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  - selecting and using personal protective equipment (PPE)
  - starting and checking operation, adjustment and alignment of reciprocating cutting system
  - operating overload system
  - working with 240 volt equipment
- application, and key features of reciprocating cutting systems, including:
  - double and single sided powered hedge trimmers
  - mechanical tree loppers
  - power shears
- types of lubricants, and their application and methods of lubrication
- service and repair procedures for reciprocating cutting systems, including:
  - drive system gearbox
  - overload devices
  - protective guards and cowlings
  - handle assembly
  - anti-vibration system
  - cleaning, sharpening and adjusting blades
- procedures for using sharpening equipment and setting sharpening angles for reciprocating cutting tools
- post-repair testing and re-testing procedures for reciprocating cutting systems, including operating system through full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the reciprocating cutting systems that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for reciprocating cutting systems
- area and equipment, including PPE, required to safely test reciprocating cutting systems
- three different reciprocating cutting systems requiring service and repair
- tools, equipment and materials appropriate for inspecting, servicing and repairing reciprocating cutting systems, including reciprocating cutting blade sharpening equipment.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURPTA110 Inspect and service pumping systems

Modification History

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Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service pumping systems according to manufacturer instructions. The unit involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. The pumping systems include centrifugal pumps used for firefighting, irrigation and water transfer, high pressure piston pumps used for pressure cleaners, or diaphragm pumps used in orchard spraying.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service pumping system of outdoor power equipment	1.1 Identify job requirements from workplace instructions 1.2 Source and interpret workplace inspection and service procedures 1.3 Identify and manage hazards associated with the tasks 1.4 Select tools and equipment and check for serviceability
2. Inspect pumping system	2.1 Inspect and test system according to manufacturer specifications, workplace procedures, and safety requirements 2.2 Identify faults and determine causes of faults

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Report inspection findings and test results according to workplace procedures, and include recommendations for necessary service, repair or adjustment 2.4 Obtain authorisation to proceed according to workplace procedures
3. Service pumping system	3.1 Select service options according to manufacturer maintenance schedule and lubrication charts 3.2 Carry out service and adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements without causing damage to components or systems 3.3 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets pressure and flow volumes and uses basic mathematical operations, including addition, subtraction, multiplication and division • Calculates deviations and tolerances from manufacturer specifications.
Oral communication	• Clarifies instructions.
Reading	• Interprets information from manufacturer and workshop literature when seeking service specifications and procedures relating to outdoor power equipment pumping systems.
Problem solving	• Refers problems outside area of responsibility to required personnel.
Technology	• Uses test equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURPTA010 Inspect and service pumping systems.

Links

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Assessment Requirements for AURPTA110 Inspect and service pumping systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service the following three outdoor power equipment pumping systems:
  - centrifugal pumping system
  - high pressure piston pumping system
  - diaphragm pumping system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service pumping systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service pumping systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to inspecting and servicing pumping systems, including procedures for:
  - safely starting and operating pumping systems

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    - working with exhaust fume hazards
    - working with 240 volt equipment
    - identification and function of positive and non-positive displacement pumping systems
- application and purpose of pumping systems, including:
    - centrifugal pumps as used for firefighting, irrigation and water transfer
    - high pressure piston pumps as used in pressure cleaners
    - diaphragm pumps as used in orchard spraying
    - drive systems
- types of lubricants and fluids, and their application
- inspection procedures for pumping systems, including:
    - component wear analysis
    - system operation analysis
- service and adjustment procedures for pumping systems, including:
    - filters, strainers and seals
    - hose and pipe fittings and attachments
    - overload devices
    - protective guards and cowlings
    - handle assembly
    - lubrication systems
    - mounting brackets and frame
    - test procedures and pump pressure, suction and discharge
    - drive systems
    - replacing service items
    - inspecting hoses fittings and mountings
- post-service testing and re-testing procedures for outdoor power equipment pumping systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the pumping systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for pumping systems

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- three pumping systems specified in the performance evidence and requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing pumping systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURPTA111 Diagnose and repair pumping systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the pumping systems of outdoor power equipment according to manufacturer specifications. The unit involves preparing for the task, sourcing the testing strategy, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The pumping systems are those of outdoor power equipment and include:

- centrifugal pumps used for firefighting, irrigation and water transfer
- diaphragm pumps used in orchard spraying
- high pressure piston pumps used for pressure cleaners.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair outdoor power equipment pumping system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with

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ELEMENTS	PERFORMANCE CRITERIA
	diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose pumping system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results. 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair pumping system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Numeracy	• Measures pumping system components and uses

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SKILL	DESCRIPTION
	mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Interprets pressure and flow volumes for pumping systems.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Interprets information from manufacturer and workshop literature when seeking pumping system specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURPTA011 Diagnose and repair pumping systems.

Links

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Assessment Requirements for AURPTA111 Diagnose and repair pumping systems

Modification History

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Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair at least one fault in each of the following pumping systems:
  - centrifugal pumping system
  - high pressure piston pumping system
  - diaphragm pumping system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair pumping systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair pumping systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to diagnosing and repairing pumping systems, including procedures for:
  - starting and operating pumping systems

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  - working with exhaust fume hazards
  - working with 240 volt equipment
- operating principles of positive and non-positive displacement pumping systems and associated components
- application, purpose and operation of the following pumping systems and components, including:
  - centrifugal pumps used for firefighting, irrigation and water transfer
  - high pressure piston pumps used in pressure cleaners
  - diaphragm pumps used in orchard spraying
- types of lubricants, and associated application and methods of lubrication
- diagnostic testing procedures for pumping systems, including:
  - testing system for pressure, suction and discharge
  - isolating faults, including internal and external leakage
- repair procedures for pumping systems, including:
- dismantling, inspecting and evaluating, replacing and adjusting the following pumping system components:
  - filters and strainers
  - hose and pipe fittings and attachments
  - overload devices
  - protective guards and cowlings
  - handle assembly
  - lubrication systems
  - drive systems
  - mounting brackets and frame
- assembling pumping system and completing operational tests
- post-repair testing and re-testing procedures for pumping systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the pumping systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for pumping systems
- area for safely testing pumping systems

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- pressure gauge
- three pumping systems specified in the performance evidence with faults
- tools, equipment and materials appropriate for diagnosing and repairing pumping systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURPTE102 Inspect and service outdoor power equipment engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service engines according to manufacturer instructions. The unit involves preparing for the task, inspecting the engine, reporting the inspection findings, servicing and adjusting the engine, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. This unit does not apply to light and heavy vehicle engines. The engines include those of two-stroke and four-stroke spark ignition, or four-stroke compression ignition engines of outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service an outdoor power equipment engine	1.1 Identify job requirements from workplace instructions 1.2 Source and interpret workplace inspection and service procedures 1.3 Identify and manage hazards associated with the tasks 1.4 Select tools and equipment and check for serviceability
2. Inspect engine	2.1 Inspect and test system according to manufacturer specifications, workplace procedures, and safety requirements

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Identify faults and determine causes of faults 2.3 Report inspection findings and test results according to workplace procedures, and include recommendations for necessary service, repair or adjustment 2.4 Obtain authorisation to proceed according to workplace procedures
3. Service engine	3.1 Select service options according to manufacturer maintenance schedule and lubrication charts 3.2 Carry out service and adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements without causing damage to components or systems 3.3 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Calculates liquid volumes and service schedule intervals using basic mathematical operations, including addition and subtraction • Interprets measuring equipment divisions.
Oral communication	• Clarifies instructions.
Reading	• Interprets information from manufacturer and workshop literature when seeking engine service specifications and procedures for outdoor power equipment.
Problem solving	• Refers problems outside area of responsibility to required persons.

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Unit Mapping Information

Supersedes and is equivalent to AURPTE002 Inspect and service outdoor power equipment engines.

Links

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Assessment Requirements for AURPTE102 Inspect and service outdoor power equipment engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service the following outdoor power equipment engine types:
  - two-stroke spark ignition engine
  - four-stroke spark ignition engine
  - four-stroke compression ignition engine
- the above work must involve:
  - minor engine adjustments
  - replacing oil and oil filter
  - inspecting ancillary components.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service outdoor power equipment engines, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service outdoor power equipment engines, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to inspecting and servicing outdoor power equipment engines, including procedures for working with:
    - rotating and hot components
    - engine oils
    - high energy ignition and charging systems
- environmental requirements, including procedures for trapping, storing and disposing of lubricant and fluids released from outdoor power equipment engines
- identification and function of two-stroke and four-stroke major engine components, including:
    - cylinder block and head
    - piston and connecting rod
    - crankshaft
    - valve train
    - manifolds
    - ports and reed valves
    - carburettors and fuel injectors
- identification and function of outdoor power equipment engine systems, including:
    - lubrication
    - cooling system, including:
        - air cooled
        - liquid cooled
    - fuel system
- basic operation of spark ignition engines and compression ignition engines, including:
    - two-stroke spark ignition engines
    - four-stroke spark ignition engines
    - four-stroke compression ignition engines
- types and applications of:
    - engine configurations
    - engine oils and filters
- inspection procedures for engines, including:
    - oil and fluid leaks
    - ancillary components, including:
        - mountings
        - belts and pulleys
- service and adjustment procedures for engines, including:
    - minor adjustments
    - changing oil and filter

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- post-service testing and re-testing procedures for outdoor power equipment engines, including operating engine through full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the equipment or outdoor power equipment engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- three different outdoor power equipment engines specified in the performance evidence and requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing outdoor power equipment engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURPTE103 Diagnose and repair outdoor power equipment engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the spark ignition and compression ignition engines of outdoor power equipment. The unit involves preparing for the task, sourcing a diagnostic testing strategy, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The engines include those in outdoor power equipment. This unit does not apply to light or heavy vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair outdoor power equipment engine	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose engine	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair engine	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but are not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Numeracy	• Measures engine components and use mathematical operations • Calculates deviations and tolerances from manufacturer specifications

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SKILL	DESCRIPTION
	• Operates specialised measurement and calibration equipment.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Interprets information from manufacturer and workshop literature when seeking outdoor power equipment engine specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses engine test and diagnosis equipment • Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURPTE003 Diagnose and repair outdoor power equipment engines.

Links

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Assessment Requirements for AURPTE103 Diagnose and repair outdoor power equipment engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two different outdoor power equipment engines, each one being a different engine type chosen from the following:
  - two-stroke spark ignition engine
  - four-stroke spark ignition engine
  - four-stroke compression ignition engine
- in the course of the above work remove, refit or replace each of the following:
  - cylinder head
  - camshaft
  - piston and connecting rod
  - crankshaft.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair outdoor power equipment engines, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair outdoor power equipment engines, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to diagnosing and repairing outdoor power equipment engines, including procedures for working with rotating and hot components
- environmental requirements, including procedures for trapping, storing and disposing of lubricants and fluids released from outdoor power equipment engines
- operating principles of the outdoor power equipment engines and associated components, including two and four-stroke spark ignition engines and four-stroke compression ignition engines, including:
    - combustion cycle
    - swept volume and engine volume
    - compression ratio
    - valve timing
    - engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
    - torque and horsepower, including brake horsepower
    - engine measurement and performance, including:
        - swept volume and engine volume
        - compression ratio
        - valve timing
        - engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
- types of lubricants, and associated application and methods of lubrication
- application, and key features of outdoor power equipment engines and components, including:
    - lubrication system, cylinder blocks, cylinders, pistons, cylinder heads, combustion chambers, inlet and exhaust manifolds, connecting rods, crankshafts, pistons, piston rings, gudgeon pins, camshafts, timing gears, vibration dampers and flywheels
- diagnostic testing procedures for outdoor power equipment engines, including:
    - engine compression tests
    - vacuum tests
    - checking for sources of fluid leak
    - checking abnormal engine noises
- dismantling procedures for outdoor power equipment engines, including procedures for:
    - measuring clearances and tolerances
    - inspecting components
- repair procedures for outdoor power equipment engines, including procedures for removing and replacing the:
    - cylinder head

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  - piston and connecting rod
  - crankshaft
  - camshaft
  - worn components
- assembly procedures for outdoor power equipment engines, including adjusting components
- post-repair testing and re-testing procedures for outdoor power equipment engines, including idle and governor adjustments, running engines to operating temperature.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the outdoor power equipment engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer outdoor power equipment engine specifications
- different types of outdoor power equipment engines specified in the performance evidence
- diagnostic equipment for outdoor power equipment engines
- tools, equipment and materials appropriate for diagnosing and repairing outdoor power equipment engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURPTE104 Overhaul outdoor power equipment engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to return outdoor power equipment engines to original manufacturer tolerances and clearances. The unit involves preparing for the task, dismantling and evaluating the engine, carrying out the overhaul procedures, reassembling and testing the engine, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment and the engines may be two and four stroke spark ignition and four stroke compression ignition engines. The unit does not apply to light or heavy vehicle engines. This unit does not apply to light or heavy vehicle engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to dismantle outdoor power equipment engine	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for overhaul activity 1.3 Analyse and select dismantling options appropriate to the circumstances 1.4 Identify hazards and environmental issues associated with overhaul activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and

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ELEMENTS	PERFORMANCE CRITERIA
	establish serviceability according to workplace procedures
2. Dismantle and evaluate engine and components	2.1 Dismantle engine and relevant components in a logical sequence according to manufacturer and workplace procedures, and safety and environmental requirements, without causing unnecessary damage to components or systems 2.2 Clean components and evaluate according to workplace procedures and safety and environmental requirements 2.3 Measure components and compare with manufacturer specifications and serviceability is determined 2.4 Determine component repair method 2.5 Identify unserviceable parts and source replacement parts 2.6 Obtain authorisation to proceed according to workplace procedures
3. Carry out overhaul	3.1 Source and interpret overhaul information 3.2 Analyse overhaul options and select most appropriate to the circumstances 3.3 Select and check overhaul tools and equipment for serviceability 3.4 Machine, repair and replace components, as required, and carry out adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble engine and components	4.1 Assemble engine according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Measure tolerances and clearances against manufacturer specifications and make necessary adjustments 4.3 Complete assembly of engine within workplace timeframes and without causing damage to other components or systems 4.4 Carry out post-assembly testing according to workplace procedures and safety and environmental requirements, and rectify any problems detected as having been introduced during the assembly process
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Uses websites to download owner manuals, workshop literature and service bulletins.
Numeracy	• Measures engine components and uses basic mathematical operations, including addition, subtraction, multiplication and division • Calculates distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Oral communication	• Clarifies instructions, reports evaluation findings and makes overhaul recommendations.
Reading	• Interprets and assesses information from manufacturer and workshop literature when seeking engine specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment • Uses specialised engine overhaul equipment.

Unit Mapping Information

Supersedes and is equivalent to AURPTE004 Overhaul outdoor power equipment engines.

Links

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Assessment Requirements for AURPTE104 Overhaul outdoor power equipment engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- overhaul at least two different outdoor power equipment engines, including:
  - at least one four-stroke spark ignition engine
  - at least one of the following:
    - two-stroke spark ignition engine
    - four-stroke compression ignition engine.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to overhaul outdoor power equipment engines, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to overhaul outdoor power equipment engines, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to overhauling engines and associated engine components, including procedures for:

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  - operating specialised engine overhaul tools, equipment and machinery
  - using cleaning chemicals and toxic substances
  - environmental requirements, including procedures for trapping, storing and disposing of lubricants and fluids released from engines
  - types, characteristics and operating principles of outdoor power equipment engines and associated engine components
- outdoor power equipment engine overhaul procedures, including:
  - methods for cleaning and preparing an engine for overhaul
  - engine dismantling procedures
  - engine component inspection, measuring and evaluation procedures, including methods for measuring and calculating tolerances and clearances
- engine and engine component repair and adjustment procedures, including:
  - engine cylinder head and cylinder block
  - engine crankshaft and camshaft
  - engine cylinder and engine sleeve fitting, boring and honing
- engine bearing tunnel and connecting rod repair
- engine assembly and adjustment procedures for achieving component tolerances, including:
  - piston to connecting rod big-end alignment
  - big-end bearing to crankshaft journal clearance
  - big-end bearing crush with bearing blue
  - piston ring end gap, back clearance and side clearance
  - main bearing to crankshaft journal clearance
  - cylinder head, valves, guides and seats
  - camshafts and cam followers
  - camshaft end float
  - crankshaft end float
  - gear backlash
  - governors
  - oil pump sealing and pick-up oil piping
- component assembly procedures and processes, including:
  - welch plugs and oil gallery plugs
  - piston and connecting rod assemblies
  - big-end bearings
  - piston rings to pistons
  - main bearings and thrust washers
  - crankshafts, including protection measures for crankshaft journals, bearings, rings and bores
  - finished camshaft bearings
  - cylinder head and components
  - camshafts and cam followers

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  - timing gears
  - oil pumps, oil squirters, oil splashers, and oil pump pick-ups
  - governors
  - balance shafts
  - fitting ancillary components, including covers and cowlings, seals, housings, crankshaft pulleys and flywheels
- post-overhaul testing procedures for engines, including:
  - fuel system adjustments
  - governor speed adjustments
  - engine protection devices.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the outdoor power equipment engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer outdoor power equipment engine specifications
- two different outdoor power equipment engines requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting outdoor power equipment engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURPTR101 Test and service 240 volt portable generators

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to test and service 240 volt portable generators according to manufacturer specifications. The unit involves preparing for the task, testing and servicing the equipment, performing post-service testing, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. The portable generators may be driven by petrol or diesel engines. Testing and servicing relate only to the 240 volt generator, and not the engine driving the generator.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Outdoor Power Equipment Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to undertake load test of portable generator	1.1 Identify job requirements from workplace instructions 1.2 Source and interpret workplace inspection and service procedures 1.3 Identify and manage hazards associated with the tasks 1.4 Select tools and equipment and check for serviceability
2. Conduct test and interpret results	2.1 Inspect and test system according to manufacturer specifications, workplace procedures, and safety requirements 2.2 Compare test results with manufacturer specifications to determine service requirements

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Obtain authorisation to proceed according to workplace procedures
3. Prepare to service generator	3.1 Analyse service options and select those most appropriate based on the circumstances 3.2 Check and select tools, equipment and materials for serviceability
4. Service generator	4.1 Service components, and adjust and replace as required according to manufacturer specifications, workplace procedures, and safety requirements, and without causing damage to components or systems 4.2 Run generator and perform resistive load test and compare with manufacturer specifications
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but are not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition and subtraction, when testing and servicing generator • Interprets gauges and test equipment.
Oral communication	• Clarifies instructions.
Reading	• Interprets information from manufacturer and workshop literature when seeking test and service specifications and procedures relating to 240 volt portable generator.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Operates specialised equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURPTR001 Test and service 240 volt portable generators.

Links

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Assessment Requirements for AURPTR101 Test and service 240 volt portable generators

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- test and service at least two different 240 volt portable generators.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to test and service 240 volt portable generators, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to test and service 240 volt portable generators, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to testing and servicing 240 volt portable generators, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - safely using electrical test equipment
  - working with exhaust fume hazards
  - working with hot or rotating parts

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- licensing and regulatory requirements for working with 240 volt components
- application, purpose and operation of different types of 240 volt portable generators, including:
  - inverter
  - standard, including:
    - brush
    - brushless
- test and service procedures for 240 volt portable generators, including:
  - alternating current (AC) output voltage and frequency
  - battery voltage
  - load testing
  - generator mountings and frame
  - engine oil level check
  - engine performance test
  - control panel inspection
- post-service testing and re-testing procedures for 240 volt portable generators, including operating portable generators through full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the 240 volt portable generators that they have tested and serviced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for 240 volt portable generators
- area and equipment, including PPE, for safely testing 240 volt portable generators
- two different 240 volt portable generators requiring testing and service
- tools, equipment and materials appropriate for testing and servicing 240 volt portable generators, including electrical load test equipment and engine tachometer.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURPTR102 Test and service electric outdoor power equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to test and service electric outdoor power equipment according to manufacturer specifications. The unit involves preparing for the task, testing and servicing the equipment, performing post-service testing, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. The electric outdoor power equipment may be 240 volt, and includes shears, blowers, shredders, mulchers, chainsaws, line trimmers, or lawn edgers. This unit does not apply to 240 volt portable generators.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Outdoor Power Equipment Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for test	1.1 Identify job requirements from workplace instructions 1.2 Source and interpret workplace inspection and service procedures 1.3 Identify and manage hazards associated with the tasks 1.4 Select tools and equipment and check for serviceability
2. Conduct test and interpret results	2.1 Carry out operational tests according to manufacturer specifications, workplace procedures, and safety requirements 2.2 Compare test results with manufacturer specifications

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Obtain authorisation to proceed according to workplace procedures
3. Prepare to service equipment	3.1 Analyse and select service options most appropriate to the circumstances 3.2 Select and check tools, equipment and materials for serviceability
4. Service equipment	4.1 Service, adjust and replace components according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 4.2 Carry out post-service testing according to workplace procedures
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition and subtraction, when testing and servicing electric outdoor power equipment according to manufacturer specifications • Interprets gauges and test equipment.
Reading	• Interprets information from manufacturer and workshop literature and seeks test and service specifications and procedures relating to electric outdoor power equipment.
Oral communication	• Clarifies instructions.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Operates electrical equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURPTR002 Test and service electric outdoor powered equipment.

Links

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Assessment Requirements for AURPTR102 Test and service electric outdoor power equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- test and service at least two different 240 volt electric outdoor power equipment tools.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to test and service electric outdoor power equipment, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to test and service electric outdoor power equipment, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to and environmental requirements relating to the test and service of electric outdoor power equipment, including:
  - procedures for selecting and using personal protective equipment (PPE)
  - observing warnings in relation to working with 240 volt systems
  - procedures for safely using electrical test equipment

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- application, purpose and operation of 240 volt outdoor electric equipment
- licensing and regulatory requirements for 240 volt components
- test and service procedures for 240 volt electric outdoor power equipment, including:
  - brush assembly
  - resistive load testing
  - circuit breaker
  - stator windings
  - rotor windings
  - handle, mountings and frame
  - electrical leads
  - switch
  - protective guards
- post-repair testing procedures for electric outdoor power equipment, including operating equipment through its full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electric outdoor power equipment that they have tested and serviced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer electric outdoor power equipment specifications
- area and equipment, including PPE, for safely testing electric outdoor power equipment
- electric powered equipment specified in the performance evidence requiring servicing
- tools, equipment and materials appropriate for testing and servicing electric outdoor power equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURPTR103 Service and repair outdoor power equipment engine management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to service and repair outdoor power equipment engine management systems (EMS) according to manufacturer specifications. The unit involves preparing for the task, determining the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. The EMS include electronic fuel injection and emission systems in hand-held or wheeled equipment. EMS may include those of two and four-stroke spark ignition engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical- Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to service and repair EMS	1.1 Identify job requirements from workplace instructions 1.2 Source and interpret workplace inspection and service procedures 1.3 Identify and manage hazards associated with the tasks 1.4 Select tools and equipment and check for serviceability
2. Determine service and repair requirements of	2.1 Inspect and test system according to manufacturer specifications, workplace procedures, and safety requirements

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ELEMENTS	PERFORMANCE CRITERIA
EMS	2.2 Identify faults through inspection and identify causes 2.3 Report inspection findings and test results according to workplace procedures, and include recommendations for necessary service, repair or adjustment 2.4 Obtain authorisation to proceed with service and repair in line with recommendations
3. Carry out service and repair activities	3.1 Select and check tools, equipment and materials required to conduct service and repair 3.2 Remove and inspect components for serviceability according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Fit and adjust reusable, repaired and replacement components according to manufacturer specifications and workplace procedures
4. Check EMS for normal operation	4.1 Operate system and compare to manufacturer specifications 4.2 Make adjustments as required and adjust and re-test rotary cutting system
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Measures EMS components and uses basic mathematical operations, including addition and subtraction • Calculates deviations and tolerances from manufacturer specifications • Measures electrical components for comparison to manufacturer specifications.
Reading	• Interprets information from manufacturer and workshop literature and seeks EMS specifications and procedures.

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SKILL	DESCRIPTION
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses diagnostic EMS equipment.

Unit Mapping Information

Supersedes and is equivalent to AURPTR003 Service and repair outdoor power equipment engine management systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURPTR103 Service and repair outdoor power equipment engine management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- use diagnostic tools to perform checks on at least two different outdoor power equipment engine management systems (EMS), in which the work must involve validating error codes and downloading EMS software
- service and repair the above two outdoor power equipment EMS
- in the course of the above work service and repair the following components:
  - fuel injection pump
  - fuel injector or carburettor
  - spark plug
  - ignition coil pack
  - generator or compensator
  - electronic control unit
  - sensors, including:
    - crankshaft angle
    - engine speed sensor
    - crankcase temperature and pressure sensor
  - emission control systems
- on two occasions, carry out EMS diagnosis, calibration and adjustment using relevant manufacturer engine diagnosis device.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair heavy vehicle compression ignition engines, including:
  - information provided by customer and supervisors

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    - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy vehicle compression ignition engines, including:
    - establishing serviceability of tools and equipment
    - documentation procedures
    - housekeeping procedures, including:
        - examination of tools and equipment
        - storage of equipment
        - identification, tagging and isolation of faulty equipment
        - disposal of excess materials
        - recycling procedures
- work health and safety (WHS) requirements relating to servicing and repairing engine management systems, including procedures for:
    - selecting and using personal protective equipment (PPE)
    - working with electrical systems
    - operating engines safely
- environmental requirements, including procedures for trapping, storing and disposing of fuel released from the EMS
- operating principles of outdoor power equipment EMS, including:
    - air fuel ratios and chemistry of combustion
    - composition of petrol fuel, including octane rating
    - open and closed loop injection
    - engine emissions
- application and key features of EMS components, including:
    - fuel system components:
        - fuel injection pump
        - fuel injector
        - tank, cap and lines
    - electronic control system components:
        - electronic control unit
        - throttle position sensor
        - generator
        - crankshaft angle and engine speed
        - crankcase air temperature and pressure sensor
        - manifold absolute pressure (MAP) sensor
        - oxygen sensor
    - ignition system, including:
        - spark plug
        - high tension lead
        - coil

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  - engine emission control system, including:
    - emission standards
    - engine emission design technology
    - evaporative
    - exhaust
    - crankcase
- identification, selection and operation of EMS diagnostic tools relevant to the engine brand and system type
- procedures for system data retrieval in order to determine usage of product, fuel quality values, system parameters and service history
- service and repair procedures available from EMS manufacturer manuals, including removal, replacement, calibration and adjustment procedures for EMS, including:
  - fuel system
  - ignition system
  - electronic control system
  - emission control system
- post-repair testing procedures for EMS, including:
  - operating engine system through full operating range
  - verify manufacturer specifications
  - performance benchmarking product against specifications.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the EMS that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for EMS
- area and equipment, including PPE, required to safely test EMS
- two outdoor power equipment EMS requiring service and repair
- tools, equipment and materials appropriate for servicing and repairing EMS, including:
- industry relevant engine diagnosis devices, including computer and system software, communications adaptor and connecting cables
- multimeter tool.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURPTR104 Inspect and service cordless electric tool skins

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service cordless electric tool skins. It involves preparing for the task, inspecting the cordless electric tool skin, reporting the inspection findings, servicing and adjusting the cordless electric tool skin, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. This unit does not apply to light and heavy vehicle engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical - Electrical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service an outdoor power equipment cordless electric tool skin	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret service information 1.3 Identify hazards and manage risks associated with the work according to workplace procedures 1.4 Inspect, check and select tools, equipment and materials for serviceability
2. Inspect cordless electric tool skin	2.1 Inspect and test cordless electric tool skin according to manufacturer specifications, workplace procedures, and safety and environmental requirements 2.2 Compare inspection results with manufacturer specifications

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Report inspection findings according to workplace procedures and recommend required repairs or adjustments 2.4 Obtain authorisation to proceed according to workplace procedures
3. Service cordless electric tool skin	3.1 Select service options according to manufacturer maintenance schedule 3.2 Carry out service and adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.3 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Make final inspection to ensure work is to workplace expectations and present equipment ready for use 4.2 Clean work area, dispose of waste and non-recyclable materials, and collect recyclable material 4.3 Complete workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Calculates voltage and current loadings using basic mathematical operations, including addition and subtraction • Interprets measuring equipment divisions.
Oral communication	• Clarifies instructions.
Reading	• Interprets information from manufacturer and workshop literature when seeking cordless electric tool skin service specifications and procedures for outdoor power equipment.
Problem solving	• Refers problems outside area of responsibility to required person.

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Unit Mapping Information

New unit.

Links

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Assessment Requirements for AURPTR104 Inspect and service cordless electric tool skins

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service skins from at least three of the following different brushed or brushless cordless electric tools:
  - line trimmer
  - chainsaw
  - lawn mower
  - edger
  - hedger
  - blower
  - pressure washer.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service cordless electric tool skins, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service cordless electric tool skins, including:
  - establishing serviceability of tools and equipment
  - documentation procedures, including:
    - recommendations for required repair or adjustment
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to inspecting and servicing cordless electric tool skins, including procedures for working with:
    - high voltage DC systems
- environmental requirements, including procedures for trapping, storing and disposing of lubricant and fluids released from outdoor power equipment skins
- identification and function of cordless electric tool skin components, including:
    - cutting shears
    - cutting chains
    - cutting blades
    - reduction gearboxes
    - waste traps
    - low pressure fans
    - high pressure water pumps
    - electrical switches
    - brushes
    - brushless motors
    - wiring harnesses
- identification and function of cordless electric tool skin outdoor power equipment systems, including:
    - lubrication
    - operation function
    - operational voltage
- basic operation of electric motors within cordless electric tool skin, including:
    - brush motors
    - brushless motors
- types and applications of:
    - electric motors
    - lubricating oils and filters
- inspection procedures for cordless electric tool skins, including:
    - oil and fluid leaks
    - ancillary components, including:
    - mountings
    - chains and blades
- service and adjustment procedures for cordless electric tool skins, including:
    - minor adjustments
    - changing lubricating fluids and filters

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- post-service testing procedures for cordless electric tool skins, including operating skin through full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the equipment or outdoor power cordless electric tool skins that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications
- three different outdoor power equipment cordless electric tool skins specified in the performance evidence and requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing outdoor power equipment cordless electric tool skins.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURPTR105 Diagnose and repair cordless electric tool skins

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair cordless electric tool skins. It involves preparing for the task, sourcing the diagnostic testing strategy, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. This unit does not apply to light and heavy vehicle engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical - Electrical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair an outdoor power equipment cordless electric tool skin	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards, assess and manage potential risks associated with diagnose and repair activity in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
2. Diagnose cordless electric tool skin	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results. 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair cordless electric tool skin	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and present equipment ready for use 4.2 Clean work area, dispose of or recycle materials, according to workplace procedures 4.3 Complete workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Numeracy	• Calculates voltage and current loadings using mathematical operations • Interprets measuring equipment divisions • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations and tolerances from manufacturer

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SKILL	DESCRIPTION
	specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Interprets information from manufacturer and workshop literature when seeking cordless electric tool skin service specifications and procedures for outdoor power equipment.
Problem solving	• Refers problems outside area of responsibility to required person.

Unit Mapping Information

New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURPTR105 Diagnose and repair cordless electric tool skins

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair at least three of the following brushed or brushless cordless electric tool skin types:
  - line trimmer
  - chainsaw
  - lawn mower
  - edger
  - hedger
  - blower
  - pressure washer.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair cordless electric tool skins, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair cordless electric tool skins, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to inspecting and servicing outdoor power equipment engines, including procedures for working with:
    - high voltage DC systems
- environmental requirements, including procedures for trapping, storing and disposing of lubricant and fluids released from outdoor power equipment skins
- identification and function of cordless electric tool skin components, including:
    - cutting shears
    - cutting chains
    - cutting blades
    - reduction gearboxes
    - waste traps
    - low pressure fans
    - high pressure water pumps
    - electrical switches
    - brushes
    - brushless motors
    - wiring harnesses
- identification and function of cordless electric tool skin outdoor power equipment systems, including:
    - lubrication
    - battery systems
- basic operation of electric motors within cordless electric tool skin, including:
    - brush motors
    - brushless motors
- types and applications of:
    - electric motors
    - lubricating oils and filters
- diagnosis procedures for cordless electric tool skins, including:
    - operation switches
    - brush motors
    - brushless motors
    - fluid leaks
    - ancillary components, including:
        - mountings
        - chains and blades
- repair procedures for cordless electric tool skins, including:
    - replacement switches

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  - replacement control units
  - brush replacement
- post-service testing procedures for outdoor power equipment engines, including operating cordless electric tool skin through full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the equipment or outdoor power cordless electric tool skins that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- three different outdoor power equipment cordless electric tool skins specified in the performance evidence and requiring servicing
- tools, equipment and materials appropriate for diagnosing and repairing outdoor power equipment cordless electric tool skins.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURPTR106 Deploy and service autonomous outdoor power equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to deploy and service autonomous outdoor power equipment. It involves preparing for the task, deploying autonomous outdoor power equipment, inspecting the autonomous outdoor power equipment, reporting the inspection findings, servicing and adjusting the equipment, and completing workplace processes and documentation.

The unit applies to those working in the outdoor power equipment service and repair industry. This unit does not apply to light and heavy vehicle engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Outdoor Power Equipment Technical - Electrical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to deploy autonomous outdoor power equipment	1.1 Remove packaging, inspect autonomous outdoor power equipment and determine set up requirements from manufacturer instructions 1.2 Identify hazards and manage risks associated with the deployment conditions 1.3 Set up perimeter zoning and define operating conditions for autonomous outdoor power equipment as per manufacturer instructions and workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.4 Set up charging station and dock autonomous outdoor power equipment 1.5 Carry out installation of autonomous outdoor power equipment
2. Prepare to inspect and service autonomous outdoor power equipment	2.1 Determine job requirements from workplace instructions and identify required tools, equipment and materials 2.2 Source and interpret service information 2.3 Identify hazards and manage risks associated with the work according to workplace procedures 2.4 Inspect, check and select tools, equipment and materials for serviceability
3. Inspect autonomous outdoor power equipment	3.1 Inspect and test autonomous outdoor power equipment according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.2 Compare inspection results with manufacturer specifications 3.3 Report inspection findings according to workplace procedures and recommend required repairs or adjustments 3.4 Obtain authorisation to proceed according to workplace procedures
4. Service autonomous outdoor power equipment	4.1 Identify and select service options according to manufacturer maintenance schedule 4.2 Carry out service and adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 4.3 Carry out post-service testing according to workplace procedures
5. Complete work processes	5.1 Make final inspection to ensure work is to workplace expectations and present equipment ready for use 5.2 Clean work area, dispose of waste and non-recyclable materials, and collect recyclable material 5.3 Process workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Calculates voltage and current loadings using basic mathematical operations, including addition and subtraction • Interprets measuring equipment divisions.
Oral communication	• Clarifies instructions.
Reading	• Interprets information from manufacturer and workshop literature when seeking autonomous outdoor power equipment specifications and procedures for outdoor power equipment.
Problem solving	• Refers problems outside area of responsibility to required person.

Unit Mapping Information

New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURPTR106 Deploy and service autonomous outdoor power equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- deploy and service at least two different autonomous outdoor equipment devices from the following:
  - robotic lawn mower
  - robotic edger
  - robotic weeder.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to deploy and service autonomous outdoor power equipment, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to deploy and service autonomous outdoor power equipment, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to deploy and service outdoor power equipment, including procedures for working with:
  - high voltage AC and DC systems
  - open circuits
- environmental requirements, including procedures for trapping, storing and disposing of lubricant and fluids released from autonomous outdoor power equipment
- identification and function of autonomous outdoor power equipment components, including:
  - cutting blades
  - servo motors
  - brushless motors
  - battery systems
  - charging systems
  - perimeter definition
  - GPS control systems
  - software updates
  - user interface display
  - electrical switches
- identification and function of autonomous outdoor power equipment systems, including:
  - lubrication
  - operation function
  - operational voltage
- inspection procedures for autonomous outdoor power equipment, including:
  - oil and fluid leaks
  - cutting blades
  - software updates
  - control module functionality
- service and adjustment procedures for cordless autonomous outdoor power equipment, including:
  - minor adjustments
  - updating software
  - sharpening blades
- post-service testing procedures for autonomous outdoor power equipment, including operating equipment through full operating range.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the equipment or autonomous outdoor power equipment that they have worked on, e.g. service orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications
- two autonomous outdoor power equipment devices specified in the performance evidence and requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing autonomous outdoor power equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTA001 Inspect and service deck, hull and cabin equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service the equipment of a vessel's deck, hull and cabin. It involves preparing for the task, inspecting the hull and deck of the vessel and the vessel equipment, reporting the inspection findings, servicing and adjusting the equipment as required, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service deck, hull and	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
cabin equipment	1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect deck and hull	2.1 Inspection is carried out to identify deterioration and damage according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Inspect deck, hull and cabin equipment	3.1 Inspection is carried out to identify deterioration, damage and improper operation according to manufacturer specifications, workplace procedures and safety requirements 3.2 Inspection results are compared with manufacturer specifications 3.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
4. Service deck, hull and cabin equipment	4.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 4.2 Post-service testing is carried out according to workplace procedures
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vessel is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to deck, hull and cabin equipment.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• interpret numbers on gauges and dials.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for securing vessels prior to beginning work.
Environmental requirements must include:	• procedures for trapping, storing and disposing of waste material produced during servicing processes.

Unit Mapping Information

Equivalent to AURRTA2001 Service deck, hull and cabin equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTA001 Inspect and service deck, hull and cabin equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the deck, hull and cabin equipment of three different vessels, including:
  - anchor
  - bow and stern rails
  - steering system
  - electrical equipment and lighting.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing marine deck, hull and cabin equipment, including procedures for securing vessels prior to beginning work
- environmental requirements, including procedures for trapping, storing and disposing of waste material produced during servicing processes
- basic construction methods of vessels, including building materials
- identification, function and basic operation of marine deck, hull and cabin equipment, including:
  - anchors
  - bow and stern rails
  - steering system
  - global positioning system (GPS)
  - radio communication system

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  - depth sounder
- inspection procedures for marine:
  - decks and hulls, including procedures for identifying deterioration and damage
  - deck, hull and cabin equipment, including procedures for identifying deterioration, damage and improper operation
- service and adjustment procedures for marine deck, hull and cabin equipment, including procedures for lubricating and adjusting steering systems
- post-service testing procedures for marine deck, hull and cabin equipment, including procedures for testing equipment in and out of water.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vessels that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer vessel specifications
- three different vessels requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing vessel deck, hull and cabin equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTA003 Winterise vessels and engine systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to winterise or prepare a vessel and its engine systems for seasonal shutdown and storage. It involves preparing for the task, testing the vessel systems and engine prior to winterising, making any recommendations for further action, and carrying out treatments of vessel and engine systems.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to winterise vessel and engine	1.1 Job requirements are determined from workplace instructions 1.2 Winterising procedures and information are accessed and

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
systems	interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment are selected and checked for serviceability
2. Winterise vessel	2.1 Vessel systems are tested prior to winterising according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Vessel systems that fail testing are reported according to workplace procedures, and rectification approval is gained from customer 2.3 Vessel systems are winterised according to manufacturer specifications, workplace procedures, and safety and environmental requirements
3. Winterise engine and systems	3.1 Vessel engine and systems are tested prior to winterising according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.2 Vessel engine and system components that fail testing are reported according to workplace procedures, and rectification approval is gained from customer 3.3 Vessel engine and systems are winterised according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.4 Engine openings are sealed against ingress of foreign matter according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vessel is presented or stored according to workplace procedures 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret safe operating procedures for vessels and engine systems in workplace and manufacturer literature • interpret information from manufacturer and workshop manuals when seeking vessel and engine system specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting findings and recording work completed.
Oral communication skills to:	• clarify instructions, report findings, and gain customer consent for required rectification measures.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate amounts and ratios of fluids.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use measuring equipment, such as battery load testers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for checking and dealing with flammable gas build-up in boats • environmental requirements, including procedures for trapping, storing and disposing of fluids drained from engine systems.

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Unit Mapping Information

Equivalent to AURRTA3003 Winterise vessel and engine systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTA003 Winterise vessels and engine systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- winterise two different vessels and their engine systems, in which the work must involve:
  - fogging engine cylinders
  - treating fuel systems
  - disconnecting batteries
  - lubricating linkages and starter drive mechanisms
  - treating cooling systems
  - weatherproofing systems and components.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to testing and winterising vessels and engine systems, including procedures for checking and dealing with flammable gas build-up in boats
- environmental requirements, including procedures for trapping, storing and disposing of fluids drained from engine systems
- pre-winterising testing procedures for vessels and engine systems, including:
  - electrical system testing
  - engine and driveline testing
  - control system testing
- winterising procedures for vessels and engine systems, including:
  - properties and use of servicing fluids, lubricants and anti-corrosion products used in winterising procedures

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- fogging engine cylinders
- emptying and treating fuel systems
- disconnecting batteries
- lubricating linkages and starter drive mechanisms
- treating cooling systems
- weatherproofing systems and components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vessels that they have winterised, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer vessel specifications
- two different vessels, engines and associated systems requiring winterising
- testing equipment for vessels and engine systems
- tools, equipment and materials appropriate for winterising vessels and engine systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTC101 Diagnose and repair marine exhaust and cooling systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the exhaust and cooling systems of marine vessels. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Marine Technical – Cooling Systems

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair marine exhaust and cooling system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose marine exhaust and cooling system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Dismantle marine exhaust and cooling system	3.1 Identify tools and equipment required to dismantle engine and establish serviceability according to workplace procedures 3.2 Dismantle exhaust and cooling system, clean and inspect components according to workplace procedures, workplace health and safety and environmental requirements 3.3 Measure and compare components against manufacturer specifications 3.4 Confirm recommendations for necessary repairs according to workplace procedures
4. Repair and re-assemble marine exhaust and cooling system	4.1 Identify required information for repair activity 4.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 4.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.4 Re-assemble exhaust and cooling system according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.5 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures marine exhaust and cooling system components • Uses mathematical operations • Calculates distances, areas, volumes and tolerances • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment including infra-red thermometers.

Unit Mapping Information

Supersedes and is equivalent to AURRTC001 Diagnose and repair marine exhaust and cooling systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTC101 Diagnose and repair marine exhaust and cooling systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the freshwater cooling exhaust and cooling systems of two different vessels
- diagnose and repair a fault in the raw water exhaust and cooling systems of two different vessels.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair marine exhaust and cooling systems including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair marine exhaust and cooling systems including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing marine exhaust and cooling systems, including procedures for:
  - lifting and supporting exhaust and cooling system components

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    - working with hot exhaust and cooling system components
- environmental requirements relating to diagnosing and repairing marine exhaust and cooling systems, including procedures for trapping, storing and disposing of materials released from exhaust systems
- purpose and operation of marine exhaust and cooling systems and components, including:
    - fresh watercooling systems, including:
        - circulation pumps
        - thermostats
        - heat exchangers
        - exhaust manifolds
        - turbochargers
        - dry exhausts
    - raw water-cooling systems, including:
        - pumps, including camshaft, belt, shaft and gear driven
        - relief valves
        - engine oil coolers
        - transmission oil coolers
        - sacrificial anodes
        - intercoolers
        - seawater strainers
        - exhaust manifolds
        - exhaust elbows and risers
        - exhaust tubes and hoses
        - wet exhausts
        - mufflers and waterlocks
        - siphon breaks
        - exhaust outlet flappers
- diagnostic testing procedures for marine exhaust and cooling systems, including:
    - manometer measurement
    - turbocharger boost measurement
    - raw water system pressure and flow measurement
    - freshwater cooling system pressure testing
    - infra-red temperature measurement
- dismantling and repair procedures for marine exhaust and cooling systems, including procedures inspecting and evaluating the following components:
    - circulation pumps
    - thermostats
    - heat exchangers
    - turbochargers and intercoolers
    - raw water pumps, including camshaft, belt, shaft and gear driven

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- relief valves
- sacrificial anodes
- seawater strainers
- exhaust manifolds
- exhaust elbows and risers
- exhaust tubes and hoses
- mufflers and waterlocks
- siphon breaks
- exhaust outlet flappers

- post-repair testing procedures for marine exhaust and cooling systems, including water testing procedures while under load.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine exhaust and cooling systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer exhaust and cooling system specifications
- two different marine vessels with faults in their freshwater cooling exhaust and cooling systems
- two different marine vessels with faults in their raw water exhaust and cooling systems
- diagnostic equipment for marine exhaust and cooling systems
- tools, equipment and materials appropriate for dismantling, testing, repairing and reassembling marine exhaust and cooling systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTD101 Diagnose and repair marine steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair marine steering systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Marine Technical - Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair marine steering system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace

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ELEMENTS	PERFORMANCE CRITERIA
	procedures
2. Diagnose marine steering system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair marine steering system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.

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SKILL	DESCRIPTION
Numeracy	• Measures steering system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURRTD001 Diagnose and repair marine steering systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTD101 Diagnose and repair marine steering systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two of the following marine steering systems:
  - mechanical cable
  - hydraulic steering
  - electrohydraulic steering.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair marine steering systems including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair marine steering systems including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing marine steering systems, including procedures for:
  - avoiding pinch points when operating steering systems

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    - working with high hydraulic oil pressures
    - determining safe working loads of ropes, chains and cables
- environmental requirements relating to diagnosing and repairing marine steering systems
- operating principles of marine steering systems, including:
    - rudders and the principle of unequal water pressures
    - propwash
- purpose and operation of marine steering systems and components, including:
    - rope, cable and chain systems
    - inboard steering systems, including:
        - steering gear
        - balanced and unbalanced rudders
        - electrohydraulic steering
    - outboard engine steering, including:
        - mechanical cable
        - hydraulic steering
        - electrohydraulic steering
    - stern drive steering, including:
        - power steering
        - electrohydraulic steering
    - bow and stern thrusters, including:
        - electric systems
        - hydraulic systems
- diagnostic testing procedures for marine steering systems, including:
    - rudder wear down
    - mechanical cable testing, including:
        - helm evaluation, including backlash
        - draglink wear
    - hydraulic system testing, including:
        - pressure testing
        - testing system for air
        - draglink wear
    - electrohydraulic system testing, including:
        - pressure testing
        - component electrical testing
- repair procedures for marine steering systems, including procedures for:
    - selecting steering system appropriate to vessel
    - dismantling, repairing and lubricating steering system components
    - replacing components
    - replacing helm and ram seal
    - identifying and measuring cables

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- post-repair testing procedures for marine steering systems, including procedures for testing for smooth operation and full range of movement.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine steering systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer steering system specifications
- marine vessels with faults in the steering systems specified in the performance evidence
- diagnostic equipment for marine steering systems
- tools, equipment and materials appropriate for repairing and adjusting marine steering systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTE106 Diagnose and repair marine outboard engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair marine outboard engines. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Marine Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair marine outboard engine	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace

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ELEMENTS	PERFORMANCE CRITERIA
	procedures
2. Diagnose marine outboard engine	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Dismantle marine outboard engine	3.1 Identify tools and equipment required to dismantle engine and establish serviceability according to workplace procedures 3.2 Dismantle engine, clean and inspect components according to workplace procedures, workplace health and safety and environmental requirements 3.3 Measure and compare components against manufacturer specifications 3.4 Confirm recommendations for necessary repairs according to workplace procedures
4. Repair and re-assemble marine outboard engine	4.1 Identify required information for repair activity 4.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 4.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.4 Re-assemble engine according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.5 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures outboard engine components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURRTE006 Diagnose and repair marine outboard engines.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTE106 Diagnose and repair marine outboard engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in two different marine two-stroke powerheads, in which the work must involve dismantling and reassembling the powerhead
- diagnose and repair a fault in two different marine four-stroke powerheads, in which the work must involve dismantling and reassembling the powerhead.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair marine outboard engines including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair marine outboard engines including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing marine outboard engines, including procedures for lifting and supporting outboard engines
- environmental requirements relating to diagnosing and repairing marine outboard engines, including procedures for trapping, storing and disposing of fluids released from engines

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- operating principles of marine outboard engines, including:
  - combustion, including:
    - air-fuel ratios and combustion cycles
    - direct injection
    - detonation
  - engine measurement and performance, including:
    - swept volume and engine volume
    - compression ratio
    - engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
    - torque and horsepower, including brake horsepower
- purpose and operation of outboard engines and components, including:
  - lubrication systems, cylinder blocks, cylinders, pistons, cylinder heads, combustion chambers, inlet manifolds, poppet and reed valves, connecting rods, crankshafts, piston rings, piston pins, camshafts, timing gears, vibration dampers and flywheels
- diagnostic testing procedures for marine outboard engines, including:
  - wet and dry compression tests
  - cylinder leakage tests
  - oil pressure tests
  - sources of fluid leaks
  - exhaust smoke diagnosis
  - checking abnormal engine noises
- dismantling procedures for outboard engines, including procedures for:
  - measuring clearances and tolerances
  - inspecting components
- repair procedures for marine outboard engines, including procedures for repairing cylinder blocks and cylinder heads
- assembly procedures for outboard engines, including procedures for fitting components and obtaining clearances and tolerances
- post-repair testing procedures for marine outboard engines, including:
  - load testing engines
  - tank testing engines
  - water testing engines.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine engines that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer outboard engine specifications
- two different marine two-stroke powerheads with system faults
- two different marine four-stroke powerheads with system faults
- diagnostic equipment for outboard engines and components
- tools, equipment and materials appropriate for dismantling, repairing, reassembling and adjusting outboard engines and components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTE107 Diagnose and repair marine inboard engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair inboard spark ignition and compression ignition engines of marine vessels. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Marine Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair marine inboard engine	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose marine inboard engine	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Dismantle marine inboard engine	3.1 Identify tools and equipment required to dismantle engine and establish serviceability according to workplace procedures 3.2 Dismantle engine, clean and inspect components according to workplace procedures, workplace health and safety and environmental requirements 3.3 Measure and compare components against manufacturer specifications 3.4 Confirm recommendations for necessary repairs according to workplace procedures
4. Repair and re-assemble marine inboard engine	4.1 Identify required information for repair activity 4.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 4.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.4 Re-assemble engine according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.5 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures inboard engine components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURRTE007 Diagnose and repair marine inboard engines.

Links

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Assessment Requirements for AURRTE107 Diagnose and repair marine inboard engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in three different marine inboard engines, including:
  - a fault in an engine cylinder head, in which the work must involve removing the cylinder head from the engine
  - a fault in two other engines where it affects one of the following components in each, and in which the work must involve removing the components from the engine:
    - engine valve timing belt
    - engine valve timing chain
    - engine valve lifters
    - cylinder head valve stem seals
    - camshaft
    - camshaft bearings
    - crankshaft
    - balance shaft or its bearings
    - pistons and connecting rods
    - cylinder block sleeves
    - main bearings and big-end bearings
    - internal oil pump
- dismantle and reassemble one of the above marine inboard engines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair marine inboard engines including:

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    - information provided by customers and supervisors
    - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair marine inboard engines including:
    - establishing serviceability of tools and equipment
    - documentation procedures
    - housekeeping procedures including:
        - examination of tools and equipment
        - storage of equipment
        - identification, tagging and isolation of faulty equipment
        - disposal of excess materials
        - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing marine inboard engines, including procedures for lifting and supporting inboard engines
- environmental requirements relating to diagnosing and repairing marine inboard engines, including procedures for trapping, storing and disposing of fluids released from engines
- operating principles of marine inboard engines, including:
    - combustion, including:
        - air-fuel ratios and combustion cycles
        - direct injection
        - detonation
    - engine measurement and performance, including:
        - swept volume and engine volume
        - compression ratio
        - engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
        - torque and horsepower, including brake horsepower
- purpose and operation of inboard engines and components, including:
    - lubrication systems, cylinder blocks, cylinders, pistons, cylinder heads, engine valves, combustion chambers, inlet and exhaust manifolds, connecting rods, crankshafts, piston rings, gudgeon pins, camshafts, timing gears, vibration dampers and flywheels
- diagnostic testing procedures for marine inboard engines, including:
    - wet and dry compression tests
    - cylinder leakage tests
    - oil pressure tests
    - sources of water ingress
    - checking sources of fluid leaks
    - exhaust smoke diagnosis
    - checking abnormal engine noises
- dismantling procedures for inboard engines, including procedures for:
    - measuring clearances and tolerances
    - inspecting components

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- repair procedures for marine inboard engines, including procedures for repairing cylinder blocks and cylinder heads
- assembly procedures for inboard engines, including procedures for fitting components and obtaining clearances and tolerances
- post-repair testing procedures for marine inboard engines, including:
  - load testing engines
  - water testing engines.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine inboard engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer inboard engine specifications
- three different marine inboard engines with the faults specified in the performance evidence
- diagnostic equipment for inboard engines
- tools, equipment and materials appropriate for dismantling, repairing, reassembling and adjusting marine inboard engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURRTQ104 Diagnose and repair marine inboard propeller drive systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair inboard propeller drive systems of marine vessels. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

This unit applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Marine Technical – Driveline and Final Drives

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair marine inboard propeller drive system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose marine inboard propeller drive system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair marine inboard propeller drive system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions

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SKILL	DESCRIPTION
	• Obtains information from customers and supervisors.
Numeracy	• Measures inboard propeller drive system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURRTQ004 Diagnose and repair marine inboard propeller drive systems.

Links

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Assessment Requirements for AURRTQ104 Diagnose and repair marine inboard propeller drive systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in three different marine inboard propeller drive systems, including repairs to at least two of the following:
  - direct drive
  - V-drive
  - drop-centre.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair marine inboard propeller drive systems including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair marine inboard propeller drive systems including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing marine inboard propeller drive systems, including procedures for working with rotating shafts
- environmental requirements relating to diagnosing and repairing marine inboard propeller drive systems
- purpose and operation of inboard propeller drive systems and components, including:
  - direct drive, including:
    - drive plate
    - transmission (forward, neutral and reverse)
    - coupling and key
    - propeller shaft
    - gland
    - log
    - strut, including A frame and I type
    - bearing, including cutlass and fibre bearings
    - propeller
  - V-drive, including:
    - drive plate
    - jack shaft
    - transmission (forward, neutral and reverse)
    - coupling and key
    - propeller shaft
    - gland
    - log
    - strut, including A frame and I type
    - bearing, including cutlass and fibre bearings
    - propeller
  - drop-centre drive, including:
    - drive plate
    - transmission (forward, neutral and reverse)
    - coupling and key
    - propeller shaft
    - gland
    - log
    - strut, including A frame, I type and stern tube
    - bearing, including cutlass and fibre bearings
    - propeller
- diagnostic testing procedures for marine inboard propeller drive systems, including:
  - propeller shaft wear, including trueness and run-out
  - bearing wear and run-out measurements

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  - coupling alignment checking methods, including laser and feeler gauge procedures
  - engine and transmission mount testing procedures
- dismantling procedures for inboard propeller drive systems, including procedures for:
  - using propeller pullers
  - using bearing pullers
  - applying heat and cooling
  - inspecting components, including shaft run-out
- repair procedures for marine inboard propeller drive systems, including procedures for replacing couplings and bearings
- assembly procedures for inboard propeller drive systems, including procedures for:
  - checking and adjusting propeller shaft run-out
  - aligning couplings
- post-repair testing procedures for marine inboard propeller drive systems, including water testing.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the inboard propeller drive systems in marine vessels that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer inboard propeller drive system specifications
- three different marine vessels with faults in the inboard propeller drive systems specified in the performance evidence
- diagnostic equipment for inboard propeller drive systems
- tools, equipment and materials appropriate for repairing and adjusting marine inboard propeller drive systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURRTQ106 Diagnose and repair marine jet drive propulsion systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the jet drive propulsion systems of marine vessels. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

This unit applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Marine Technical – Driveline and Final Drives

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair marine jet drive propulsion system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose marine jet drive propulsion system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Dismantle marine jet drive propulsion system	3.1 Identify tools and equipment required to dismantle engine and establish serviceability according to workplace procedures 3.2 Dismantle propulsion system, clean and inspect components according to workplace procedures, workplace health and safety and environmental requirements 3.3 Measure and compare components against manufacturer specifications 3.4 Confirm recommendations for necessary repairs according to workplace procedures
4. Repair and re-assemble marine jet drive propulsion system	4.1 Identify required information for repair activity 4.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 4.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.4 Re-assemble propulsion system according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.5 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures jet drive propulsion system components • Uses mathematical operations • Calculates distances, areas, volumes and tolerances • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURRTQ006 Diagnose and repair marine jet drive propulsion systems.

Links

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Assessment Requirements for AURRTQ106 Diagnose and repair marine jet drive propulsion systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the following two jet drive propulsion systems in different marine vessels:
  - centrifugal
  - axial flow.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair marine jet drive propulsion systems including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair marine jet drive propulsion systems including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing marine jet drive propulsion systems, including procedures for lifting and supporting jet drive propulsion systems

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- environmental requirements relating to diagnosing and repairing marine jet drive propulsion systems, including procedures for trapping, storing and disposing of fluids released from jet drive propulsion systems
- operating principles of jet drive propulsion systems and associated components, including:
  - producing thrust using water pressure
  - changing vessel direction
- purpose and operation of jet drive propulsion systems and components, including:
  - types of jet pumps, including:
    - centrifugal
    - axial flow
  - methods of reversing thrust, including:
    - cable-operated buckets
    - hydraulically-operated buckets
    - electrically-operated buckets
  - gearboxes
- diagnostic testing procedures for marine jet drive propulsion systems, including:
  - housing to impeller clearance and wear
  - bearing wear
  - seal wear
  - bilge pump operation
  - gearbox operation
  - bucket operation
- dismantling procedures for jet drive propulsion systems, including procedures for:
  - measuring clearances and tolerances
  - inspecting components
- repair procedures for marine jet drive propulsion systems, including procedures for:
  - replacing impellers and housing
  - replacing bearings and seals, including oil replacement
  - replacing couplings
  - servicing buckets
- post-repair testing procedures for marine jet drive propulsion systems, including water testing.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the jet drive propulsion systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer jet drive propulsion system specifications
- a centrifugal jet drive propulsion system in a marine vessel with system faults
- an axial flow jet drive propulsion system in a marine vessel with system faults
- diagnostic equipment for jet drive propulsion systems
- tools, equipment and materials appropriate for dismantling, repairing, reassembling and adjusting marine jet drive propulsion systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURRTR106 Diagnose and repair marine electrical systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the low-voltage electrical systems of marine vessels, such as dash instrumentation, switch and fuse panels, bilge pumps and lighting, global positioning systems (GPS), depth sounders, fish finders, communications equipment and radars. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

This unit applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair marine electrical system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose marine electrical system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair marine electrical system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Interprets wiring diagrams • Organises and interprets technical information from

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SKILL	DESCRIPTION
	workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Uses mathematical operations • Calculates current flow, resistance and voltage • Interprets numbers on electrical measuring equipment • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses electrical measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURRTR006 Diagnose and repair marine electrical systems.

Links

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Assessment Requirements for AURRTR106 Diagnose and repair marine electrical systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the following marine electrical systems and components:
  - dash instrumentation
  - switch and fuse panels
  - bilge pump system
  - lighting system
  - depth sounder or fish finder
  - global positioning system (GPS)
  - marine radio.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair marine electrical systems including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair marine electrical systems including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing marine electrical systems, including procedures for:
    - checking and dealing with flammable gas build-up in boats, including LPG and hydrogen, prior to starting electrical system work
    - working with potentially high-current electrical systems
- environmental requirements relating to diagnosing and repairing marine electrical systems
- operating principles of electrical systems and associated components, including:
    - Ohm's law
    - electromagnetic interference
- purpose and operation of electrical systems and components, including:
    - marine vessel lighting systems, including marine regulations for vessel lighting
    - dash instrumentation
    - switch and fuse panels
    - bilge pump systems
    - depth sounders and fish finders
    - GPS
    - marine radios
    - 12-volt marine accessories, including winches
    - autopilot and radar
    - marine battery charge management systems
    - networked communication topographies
- diagnostic testing procedures for marine electrical systems, including:
    - testing for circuit resistance, voltage drop and current draw
    - testing for open and short circuits
    - testing for shorts to power circuits and grounds
    - inspecting for component moisture ingress and connector damage
    - testing marine battery charge management systems
    - testing networked communication topographies
- repair procedures for marine electrical systems, including procedures for:
    - selecting wiring gauge
    - soldering wiring
    - insulating wiring
    - crimping terminals
    - removing and replacing connectors
    - repairing networked communication topographies
- post-repair testing procedures for marine electrical systems.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine electrical systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer electrical system specifications
- marine vessel with faults in the electrical systems and components specified in the performance evidence
- diagnostic equipment for marine vessel electrical systems
- tools, equipment and materials appropriate for repairing marine vessel electrical systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTR108 Diagnose and repair marine network electronic control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair network electronic control systems in marine vessels. These systems include two-wire high and low speed (CAN-bus) and single wire low speed (LIN-bus) networked circuits essential to control engine powertrain, vehicle dynamic control functions and body control functions. They include vehicle infotainment and climate control systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

This unit applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Marine Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair network electronic control system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with

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ELEMENTS	PERFORMANCE CRITERIA
	diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose network electronic control system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair network electronic control system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.

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SKILL	DESCRIPTION
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications • Interprets text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Matches electrical components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • Interprets vehicle electrical measurements and readings • Measures voltage, current and resistance and uses mathematical operations • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised equipment.

Unit Mapping Information

New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTR108 Diagnose and repair marine network electronic control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in three different network electronic control circuits that set network communication diagnostic trouble codes (DTCs), including at least one of each of the following:
  - a single wire circuit (LIN-bus)
  - a two-wire circuit (CAN-bus).

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair network electronic control systems including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair network electronic control systems including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing network electronic control systems, including procedures for identifying hazards and controlling risks associated with:
  - working on vehicle high voltage ignition systems
  - wearing jewellery while working around high current wiring systems
- environmental procedures relating to diagnosing and repairing network electronic control systems
- diagnostic testing procedures for network electronic control systems, including:
  - using diagnostic flow charts
  - accessing and interpreting scan tool system data, including:
    - DTCs, including ‘U’ type communication codes
    - live data
    - waveforms
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - determining damage to system wiring and connectors
- repair procedures for network electronic control systems, including:
  - connector removal and replacement procedures
  - removal and replacement procedures for vehicle network electronic control system components
- post-repair testing procedures for network electronic control systems, including:
  - confirming fault rectification DTC clearing procedures
  - checking for electrical connector mating.
- operating principles of network electronic control systems and associated components, including:
  - assurance of message delivery, non-conflicting messages, minimum time of delivery, and electromagnetic field (EMF) noise resilience
  - network topographies
  - network protocols, including characteristics and data speeds
- purpose and operation of network electronic control systems and components, including:
  - controlled area network (CAN), including:
    - nodes: host processor, CAN controller, and transceiver
    - gateway modules
    - terminating resistors
    - data transmission
    - vehicle data logic connector (DLC)
  - local interconnect network (LIN), including:
    - master and slaves
    - data transmission.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electronic control systems in marine vessels that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer transmission specifications
- two different network electronic control circuits
- diagnostic equipment for marine network electronic control systems
- tools, equipment and materials appropriate for diagnosing, testing, repairing, and adjusting marine network electronic control systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURRTX103 Diagnose and repair marine outboard and stern drive transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the outboard and stern drive transmissions of marine vessels. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

This unit applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Marine Technical – Transmission

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair transmission	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose transmission	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Dismantle transmission	3.1 Identify tools and equipment required to dismantle engine and establish serviceability according to workplace procedures 3.2 Dismantle transmission, clean and inspect components according to workplace procedures, workplace health and safety and environmental requirements 3.3 Measure and compare components against manufacturer specifications 3.4 Confirm recommendations for necessary repairs according to workplace procedures
4. Repair and re-assemble transmission	4.1 Identify required information for repair activity 4.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 4.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.4 Re-assemble transmission according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.5 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures transmission components • Uses mathematical operations • Calculates distances, areas, volumes and tolerances • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURRTX003 Diagnose and repair marine outboard and stern drive transmissions.

Links

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Assessment Requirements for AURRTX103 Diagnose and repair marine outboard and stern drive transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in:
  - at least two different marine outboard transmissions
  - at least one marine stern drive transmission.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair marine outboard and stern drive transmissions including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair marine outboard and stern drive transmissions including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing marine outboard and stern drive transmissions, including procedures for:
  - working with turning propellers

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    - operating manual and mechanical lifting equipment
- environmental requirements relating to diagnosing and repairing marine outboard and stern drive transmissions, including procedures for trapping, storing and disposing of fluids released from transmissions
- operating principles of outboard and stern drive transmissions and associated components, including:
    - gear types
    - gear ratios and torque reduction and multiplication
- purpose and operation of outboard and stern drive transmissions and components, including:
    - power flows
    - gearshift mechanisms, including:
        - cone clutches
        - mechanical dog clutches
    - methods of matching propeller to transmission gear ratio, engine output and boat performance
- diagnostic testing procedures for marine outboard and stern drive transmissions, including procedures for analysing:
    - gear selection problems
    - abnormal system noise
- dismantling procedures for outboard and stern drive transmissions, including procedures for:
    - measuring clearances and tolerances
    - inspecting components
- repair procedures for marine outboard and stern drive transmissions, including procedures for:
    - gearshift mechanisms
    - bearings and seals, including oil replacement
    - gears
    - propellers
- assembly procedures for outboard and stern drive transmissions, including procedures for:
    - shimming bearings and gears
    - adjusting preload and rolling torque
    - checking gear tooth contact patterns
- post-repair testing procedures for marine outboard and stern drive transmissions, including water testing.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the outboard and stern drive transmissions in marine vessels that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer transmission specifications
- two different marine outboard transmissions with faults
- one marine stern drive transmission with faults
- diagnostic equipment for marine outboard and stern drive transmissions
- tools, equipment and materials appropriate for dismantling, repairing, reassembling and adjusting marine outboard and stern drive transmissions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURRTX104 Diagnose and repair marine inboard transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the inboard transmissions of marine vessels. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

This unit applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Marine Technical – Transmission

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair transmission	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace

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ELEMENTS	PERFORMANCE CRITERIA
	procedures
2. Diagnose transmission	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Dismantle transmission	3.1 Identify tools and equipment required to dismantle engine and establish serviceability according to workplace procedures 3.2 Dismantle transmission, clean and inspect components according to workplace procedures, workplace health and safety and environmental requirements 3.3 Measure and compare components against manufacturer specifications 3.4 Confirm recommendations for necessary repairs according to workplace procedures
4. Repair and re-assemble transmission	4.1 Identify required information for repair activity 4.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 4.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.4 Re-assemble transmission according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 4.5 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures transmission components • Uses mathematical operations • Calculates distances, areas, volumes and tolerances • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURRTX004 Diagnose and repair marine inboard transmissions.

Links

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Assessment Requirements for AURRTX104 Diagnose and repair marine inboard transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two different marine inboard transmissions.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair marine inboard transmissions including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair marine inboard transmissions including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing marine inboard transmissions, including procedures for:
  - working with inboard propeller drive systems and rotating shafts
  - working near hot exhaust systems
  - working in restricted spaces

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  - using manual and mechanical lifting equipment
- environmental requirements relating to diagnosing and repairing marine inboard transmissions, including procedures for trapping, storing and disposing of fluids released from transmissions
- operating principles of inboard transmissions and associated components, including:
  - gear types
  - gear ratios and torque reduction and multiplication
  - simple gear trains
  - compound gear trains
  - lubricant types
- purpose and operation of inboard transmissions and components, including:
  - power flows
  - V-drive transmissions
  - in-line transmissions
  - step-up transmissions
  - hydraulic transmissions
  - counter shaft transmissions
  - planetary gear transmissions
  - mechanical dog clutch transmissions
  - cone clutch transmissions
  - methods of matching propeller to transmission gear ratio, engine output and boat performance
- diagnostic testing procedures for marine inboard transmissions, including procedures for analysing:
  - gear selection problems
  - drive problems
  - abnormal system noise
- removal procedures for inboard transmissions
- dismantling procedures for inboard transmissions, including procedures for:
  - measuring clearances and tolerances
  - inspecting components
- repair procedures for marine inboard transmissions, including procedures for:
  - gearshift mechanisms
  - bearings and seals, including oil replacement
  - gears and transmission shafts
- assembly procedures for inboard transmissions, including procedures for:
  - shimming bearings and gears
  - adjusting preloads
- installation procedures, including procedures for aligning engines
- post-repair testing procedures for marine inboard transmissions, including water testing.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the inboard transmissions in marine vessels that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer transmission specifications
- two different marine inboard transmissions with faults
- diagnostic equipment for marine inboard transmissions
- tools, equipment and materials appropriate for dismantling, repairing, reassembling and adjusting marine inboard transmissions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURSBA102 Identify and match uncommon automotive parts

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to identify uncommon or unusual automotive components, parts and products to meet customer vehicle requirements. It involves matching these automotive parts or products to customer vehicle or equipment by cross-referencing manufacturer, model and other identifiable numbers using manuals, and computer-generated or online catalogue systems.

The unit applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Sales and Parts, Administration and Management Support and Logistics

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine required information relating to uncommon part	1.1 Gather and document available information on required uncommon part and confirm with customer 1.2 Determine original host for part from available information
2. Identify and record details of part	2.1 Identify and access parts index system for host 2.2 Match part to cataloguing information by accessing and using parts index system, its aids and user guides, and identify potential suppliers 2.3 Seek clarification regarding potential match from supplier as required 2.4 Document and process identifying details of part

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ELEMENTS	PERFORMANCE CRITERIA
3. Supply or order part	3.1 Supply part to customer or order if not in stock according to workplace procedures 3.2 Process workplace documentation, including customer records, according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Writing	• Enters information into sales orders legibly, workplace forms and databases.
Initiative and enterprise	• Applies analytical skills when identifying and analysing technical information when sourcing non-standard parts or products that meet a customer need.
Technology	• Uses digital systems and tools.

Unit Mapping Information

Supersedes and is equivalent to AURSBA002 Identify and match uncommon automotive parts.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSBA102 Identify and match uncommon automotive parts

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and match one uncommon automotive part from each of the following categories for three different customers:
  - vintage part
  - obsolete part
  - non-original part.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to identify and match uncommon automotive parts, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - information gathering techniques, including:
    - active listening and questioning
    - effective face-to-face and telephone customer service
- workplace procedures required to identify and match uncommon automotive parts, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- information gathering techniques, including:
    - active listening and questioning
    - effective face-to-face and telephone customer service
- common automotive terminology
- attributes that make parts or products uncommon including their being:
    - difficult to match
    - vintage or obsolete
    - not original
- identification and function of automotive vehicle systems
- application and operation of automotive parts index systems, including:
    - catalogues
    - computer databases
    - online resources
- key legal requirements relating to supplying uncommon automotive parts, including obligations under Australian Consumer Law (ACL).

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to identifying and matching uncommon automotive parts, e.g. customer invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive sales and service workplace or simulated workplace
- three different customers with different commercially realistic requirements for uncommon parts
- automotive parts index systems, including:
    - catalogues
    - computer databases.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURSCA101 Select and supply automotive parts and products

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to identify, select and supply automotive parts and products to meet customer requirements. It involves matching a diverse range of automotive components, parts and products to a customer's vehicle or equipment by cross-referencing manufacturer, model and other identifiable numbers using manual, computer-generated and online catalogue systems.

The unit applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Sales and Parts, Administration and Management Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine required information relating to part or product	1.1 Gather and document available information on required item and confirm with customer 1.2 Determine original host for the part or product from available information
2. Identify part or product and record details	2.1 Identify and access index system for part or product host 2.2 Match part or product with cataloguing information using the parts index system, its aids and user guides, and identify potential suppliers 2.3 Seek clarification regarding potential match from supplier as required

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ELEMENTS	PERFORMANCE CRITERIA
	2.4 Document and process identifying details of part or product
3. Supply or order part or product	3.1 Supply part to customer or order if not in stock according to workplace procedures 3.2 Process workplace documentation according to workplace procedures 3.3 Update customer records according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Writing	• Enters information into sales orders, workplace forms and databases legibly.
Initiative and enterprise	• Applies analytical skills when identifying and analysing technical information when sourcing parts or products that meet a customer need.
Technology	• Uses digital systems and tools.

Unit Mapping Information

Supersedes and is equivalent to AURSCA001 Select and supply automotive parts and products.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSCA101 Select and supply automotive parts and products

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- select and supply at least one automotive part or product from each of the following categories for three different customers:
  - service items, including filters, oils, coolants, spark plugs, fan belts, electrical accessories, sensors and actuators
  - non-specific items, including merchandise, apparel, cleaning products and tools
  - accessory items, including car mats, seat covers, lighting and vehicle covers.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to select and supply automotive parts and products, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - information gathering techniques, including:
    - active listening and questioning
    - effective face-to-face and telephone customer service
- workplace procedures required to select and supply automotive parts and products including:
  - documentation procedures, including:
    - customer records
- common automotive terminology
- identification and function of automotive vehicle systems
- types and applications of the automotive parts and products specified in the performance evidence

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- application and operation of automotive parts index systems, including:
  - catalogues
  - computer databases
  - online resources
- key legal requirements relating to supplying automotive parts and products, including obligations under the Australian Consumer Law (ACL).

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to selecting and supplying automotive parts and products, e.g. customer invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive sales and service workplace or simulated workplace
- three different customers with different commercially realistic requirements for automotive parts or products
- automotive parts index systems, including:
  - catalogues
  - computer databases.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSCA102 Present automotive products and services for sale

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to present automotive products and services in a business sales area to maximise product and service impact on customers. It also involves monitoring and reviewing customer feedback. The unit involves applying knowledge of automotive products and basic display concepts to maintain and maximise product and service sales and the overall appearance of the sales area.

The unit applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Sales and Parts, Administrations and Management Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element*
1. Maximise presentation of sales area	1.1 Define stock presentation area from floor and display plan, observation of space available and work instructions 1.2 Determine and present minimum product numbers and types according to workplace procedures 1.3 Prepare ancillary display materials to enhance presentation of stock 1.4 Keep stock display areas clean, tidy and safe 1.5 Use handling, storage and display techniques according to product types, workplace procedures and safety requirements
2. Display individual	2.1 Determine display requirements from workplace instructions

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ELEMENTS	PERFORMANCE CRITERIA
products	2.2 Source product to be displayed according to workplace procedures 2.3 Display product to maximise market appeal according to workplace procedures 2.4 Prepare and locate display labels, price tickets and ancillary materials with product 2.5 Monitor product condition during display period and take action to maintain market appeal according to workplace procedures
3. Review effectiveness of presentation area	3.1 Seek feedback on display and presentation area from customers 3.2 Determine and undertake action to improve presentation of stock and area within scope of own role

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets numerical information in floor and display plans • Uses mathematical operations, including addition and subtraction, to estimate quantity and volume of product and stock.
Oral communication	• Clarifies instructions and makes recommendations relating to display presentation.
Reading	• Interprets information from workplace instructions, floor and display plans, and product and service labelling and literature.
Writing	• Prepares display labels and price tickets legibly.
Technology	• Uses digital systems • Uses specialised equipment.

Unit Mapping Information

Supersedes and is equivalent to AURSCA002 Present automotive products and services for sale.

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Links

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Assessment Requirements for AURSCA102 Present automotive products and services for sale

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- organise at least three different displays or presentation areas in an automotive workplace for different automotive products
- organise at least two different displays or presentation areas in an automotive workplace for different automotive services.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to present automotive products and services for sale, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to present automotive products and services for sale, including:
  - documentation procedures
- work health and safety (WHS) requirements relating to presenting products and services in an automotive workplace, including procedures for:
  - manually handling stock
  - ensuring clear walkways
  - handling chemicals and dangerous goods
  - using personal protective equipment (PPE)
- principles of display design, including:
  - creating impact
  - use of colour and illumination
  - accessibility and ease of maintenance

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    - interactivity
- considerations for maximising market appeal, including:
    - ensuring product is clean and complete
    - locating product in a position that maximises presentation
- types and applications of display and presentation areas, including:
    - areas, including:
        - interior and exterior
        - permanent and temporary
        - publicly accessible
    - display systems, including cable, rod and sign systems
    - showcases
    - brochure and information display systems
    - graphic display systems, including computer monitor, television and projector
- gaining feedback on effectiveness of display and presentation areas, including procedures for:
    - analysing sales
    - delivering and analysing simple customer questionnaires.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to presenting automotive products and services for sale, e.g. sales area floor plan.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following should be made available:

- automotive workplace or simulated workplace
- commercially realistic range of automotive services and products for sale
- commercially realistic presentation or display area
- materials needed for display of products and service information.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURSCA103 Apply sales procedures in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to effectively apply sales procedures when selling a range of automotive products and services. It involves approaching customers, conveying product and service knowledge, overcoming customer objections, and closing off a sale.

The unit applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Sales and Parts, Administration and Management Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop product and sales knowledge	1.1 Research and clarify use, features and application of products and services according to workplace procedures 1.2 Research customer buying behaviour 1.3 Consult experienced sales staff or product information guides to increase and confirm knowledge of products, services and sales techniques
2. Approach customer and address product or service requirements	2.1 Approach customer according to workplace standards and customer behaviour 2.2 Determine customer buying motives and requirements, and guide customer to suitable product, service or specialist as required

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Respond to routine customer questions about features and benefits of product or service, or refer to more experienced sales staff
3. Identify and resolve objections	3.1 Identify and acknowledge customer objections 3.2 Analyse solutions to objections in line with category of objection 3.3 Offer solutions to objections within scope of own responsibility and according to workplace procedures
4. Close sale	4.1 Monitor, identify and respond to customer buying signals 4.2 Select and apply method of closing sale to encourage customer purchase decision according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required source of information efficiently.
Numeracy	• Uses mathematical operations, including addition, subtraction, multiplication, division and percentages, to calculate price and discounts.
Oral communication	• Conveys positive and welcoming approach to customers • Uses questioning techniques and listening skills to determine customer requirements.
Reading	• Interprets product and service information in workplace and manufacturer literature.
Technology	• Uses digital systems and tools.

Unit Mapping Information

Supersedes and is equivalent to AURSCA003 Apply sales procedures in an automotive workplace.

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Assessment Requirements for AURSCA103 Apply sales procedures in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- engage with at least three potential automotive customers and respond to their enquiries regarding product and service features in line with workplace customer service standards
- sell automotive products or services to at least three different customers.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to apply sales procedures in an automotive workplace, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to apply sales procedures in an automotive workplace including:
  - documentation procedures
- product and service knowledge applicable to automotive workplace, including:
  - specific product knowledge for area or section including
    - use and safety requirements
  - company merchandise and service range
  - stock databases and service delivery calendar
  - equipment safety features
  - warranties and conditions
  - price and discounts available
- customer types and needs, including:
  - customer behaviour and cues

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    - customer buying motivations, including functional and emotional motivation
    - demographics, lifestyle and income
    - individual and cultural differences
- key features of automotive industry codes of practice and statutory requirements that are reflected in workplace procedures relating to:
    - sale of products and services
    - consumer rights and protection
- sales techniques relating to selling products and services in an automotive workplace, including:
    - techniques for opening and closing a sale
    - recognising buying signals
    - overcoming customer objections, including those relating to:
        - characteristics and feature of merchandise
        - price of merchandise
    - strategies to focus customers on specific merchandise
- common workplace procedures relating to:
    - analysing individual and workplace sales performance
    - approaching customers, including:
        - greeting customer according to workplace conventions and customer service standards
        - conveying a positive impression to encourage customer interest
        - interpreting customer non-verbal communication cues
    - handling customer complaints.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to applying sales techniques when selling automotive products and services in an automotive sales and service workplace, e.g. sales invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following should be made available:

- automotive sales and service workplace or simulated workplace
- workplace procedures relating to sales and customer service
- commercially realistic range of automotive retail products and services for sale
- product and service information
- three different customers with commercially realistic product and service needs.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURSCA104 Carry out cash and non-cash payment operations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to undertake cash and non-cash transactions and prepare and distribute invoices.

The unit applies to those working in administration and financial sales roles in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Sales and Parts, Administration and Management Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Handle cash and non-cash payment transactions	1.1 Determine transaction amount taking into account factors that impact on the balance 1.2 Receive and count cash, and give change 1.3 Process credit and debit card transactions using required equipment and according to financial provider and workplace procedures 1.4 Receive cheques and examine for correctness 1.5 Store cash, cheques and credit and debit card records according to workplace procedures 1.6 Note and refer irregularities to supervisor for resolution 1.7 Issue receipts and document transactions according to workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
2. Carry out invoicing procedures	2.1 Determine invoicing requirements and perform calculations to produce customer invoices 2.2 Complete documentation and check content for accuracy 2.3 Distribute invoices to required persons or section for verification and approval prior to being dispatched 2.4 Dispatch approved invoices within designated timeframes 2.5 File invoice copies for auditing purposes according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Performs mathematical operations, including, addition, subtraction, multiplication, division, percentages and fractions, to determine pricing and payment requirements.
Oral communication	• Participates in verbal exchanges to convey and clarify information relating to irregularities in payment transactions.
Reading	• Interprets information in a range of financial operation documentation and workplace procedures.
Writing	• Prepares receipts and invoices relating to transactions legibly.
Technology	• Uses workplace office or sales equipment • Operates specialised point-of-sale equipment • Uses digital systems and tools.

Unit Mapping Information

Supersedes and is equivalent to AURSCA004 Carry out cash and non-cash payment operations.

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Assessment Requirements for AURSCA104 Carry out cash and non-cash payment operations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine transaction amount and conduct one of each of the following different payment operations:
  - cash
  - credit or debit card
  - cheque
- prepare at least three invoices for different products or services and submit them for payment.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out cash and non-cash payment operations, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to carry out cash and non-cash payment operations, including:
  - documentation procedures
- key legal requirements relating to carrying out cash and non-cash payment operations, including obligations under the Australian Consumer Law (ACL)
- factors to be considered when calculating final price, including:
  - goods and services tax (GST)
  - sales, discounts and promotions
  - deposits and partial payments
- procedures for carrying out cash and non-cash operations, including:

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    - calculating sales balance
    - receiving and counting money
    - common sales security procedures for handling cash
    - calculating and returning change, including using:
        - manual methods
        - point-of-sale (POS) equipment
    - receiving and processing cheques
    - using electronic funds transfer at point-of-sale (EFTPOS) equipment
    - issuing receipts
- operation and maintenance of common sales equipment, including:
    - calculators
    - POS equipment, including procedures for changing receipt rolls
    - EFTPOS terminals
- procedures for preparing and distributing invoices, including:
    - types and applications of invoices
    - required contents of invoices
    - common types of software for producing invoices
    - common methods of distributing invoices to customers.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having carried out cash and non-cash payment operations in an automotive sales and service workplace, e.g. sales receipts and invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following should be made available:

- sales and service workplace or simulated workplace
- workplace procedures for carrying out cash and non-cash payment operations and distributing invoices
- commercially realistic situations involving cash and non-cash payment transactions
- point-of-sale software
- computer hardware, software and business equipment required for processing cash and non-cash transactions and preparing invoices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURSCA105 Sell automotive products and services

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to sell products and services in an automotive retail environment. It involves identifying potential sales opportunities, and presenting, demonstrating and selling a range of automotive products and services.

The unit applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Sales and Parts, Administration and Management Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Engage customer and identify potential sale	1.1 Maintain welcoming customer environment and approach customer in a timely and professional manner according to workplace procedures 1.2 Use interpersonal skills to engage the customer according to workplace procedures 1.3 Identify customer needs and expectations for specific products and services through questioning and active listening
2. Present and demonstrate product or service to customer	2.1 Select product or service options that best meet customer needs 2.2 Explain and demonstrate product or service features, functions and accessories, eliciting customer interaction 2.3 Give customers the opportunity to test or trial the product or

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ELEMENTS	PERFORMANCE CRITERIA
	service in line with workplace procedures 2.4 Assist customers to identify their preferred option
3. Obtain customer agreement to purchase product or service	3.1 Discuss or negotiate price for product or service and agree with customer 3.2 Make sale using closing technique according to workplace procedures 3.3 Process and document sale according to workplace procedures
4. Complete transaction and customer follow-up procedures	4.1 Supply or deliver product or service transaction to customer according to supplier specifications and workplace delivery procedures 4.2 Determine customer satisfaction and take remedial action as required to maximise repeat business or referral opportunities 4.3 Identify opportunities for value adding or repeat sales and take follow-up action in line with workplace procedures 4.4 Complete customer records and develop plans for follow-up of potential new sales of products and services

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition, subtraction, multiplication and division, to calculate quantities and prices • Estimates and calculates timeframes for organising delivery and follow-up services.
Reading	• Interprets textual and numerical information in product or service documentation to provide customer advice • Interprets key information in sales documentation and work instructions to determine required action.
Writing	• Enters information into sales orders, workplace forms and databases legibly.
Problem solving	• Resolves routine problems relating to product availability and service delivery.
Technology	• Operates specialised point-of-sale equipment

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SKILL	DESCRIPTION
	• Uses digital systems and tools.

Unit Mapping Information

Supersedes and is equivalent to AURSCA005 Sell automotive products and services.

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Assessment Requirements for AURSCA105 Sell automotive products and services

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- sell automotive products or services to at least three different customers in an automotive sales and service workplace or simulated location.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to sell automotive products and services, including:
  - information provided by customer and supervisors
  - manufacturer and supplier specifications and procedures or equivalent documentation
- workplace procedures required to sell automotive products and services, including:
  - documentation procedures
  - sales processes
  - dealing with customers
  - complaints handling
  - consumer rights and responsibilities
- sales communication techniques, including:
  - customer buying signals
  - effective face-to-face and telephone selling techniques
  - upselling and value adding sales techniques
  - active listening and questioning techniques
  - strategies for dealing with dissatisfied customers
- key features of loyalty programs and strategies for encouraging repeat business
- key features of point-of-sale equipment, stock databases and service delivery calendars

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- key legal requirements relating to selling automotive products and services, including obligations under the Australian Consumer Law (ACL).

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having sold a range of automotive products and services, e.g. sales invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive sales and service workplace or simulated location
- workplace procedures relating to customer sales and service
- product and service information
- commercially realistic range of automotive retail products and services
- point-of-sale equipment
- three different customers with commercially realistic sales needs.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURSCA106 Promote automotive products and services

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to promote automotive products and services. It involves applying a high level of product or service knowledge, promoting products and services to current and potential customers, establishing on-selling opportunities in a sales situation, and recommending complementary products and services to customers.

The unit applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Sales and Parts, Administration and Management Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop knowledge of automotive products and services	1.1 Research and clarify the use, purpose and application of products and services according to workplace procedures 1.2 Research and interpret comparisons between available products and services 1.3 Research and interpret workplace promotional and marketing activities relevant to products and services
2. Identify and match customer needs to products and services	2.1 Determine customer buying motives and requirements through questioning, active listening and non-verbal communication cues 2.2 Guide customer to product or service that matches their identified buying motives and requirements

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Explain and highlight features and benefits of product or service and relevance to customer requirements 2.4 Conduct and align demonstrations to customer buying motives and requirements according to workplace marketing and sales practices 2.5 Use selling techniques according to workplace procedures and legal requirements
3. Maximise sales opportunities	3.1 Identify and apply opportunities for making additional sales 3.2 Assess on-sell opportunities through knowledge of customer needs and available complementary automotive products and services 3.3 Determine customer need and interest in additional or complementary products and services 3.4 Discuss and promote benefits of additional or complementary products and services to customer

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses mathematical operations, including addition, subtraction, multiplication, division and percentages, to estimate and calculate costs for customers.
Oral communication	• Describes and explains features and benefits of products and services using clear, jargon-free language, and tone and pace required for customer.
Reading	• Interprets product and service specifications and promotional materials to advise customers • Interprets and analyses customer information for on-selling opportunities.
Writing	• Prepares quotes and completes workplace forms and documentation relating to sales or promotional activities legibly.
Technology	• Demonstrates automotive products and services • Uses digital systems and tools.

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Unit Mapping Information

Supersedes and is equivalent to AURSCA006 Promote automotive products and services.

Links

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Assessment Requirements for AURSCA106 Promote automotive products and services

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- promote different automotive products or services to at least three different customers in line with workplace customer service standards.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to promote automotive products and services, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - complementary products and services
  - internet resources
- workplace procedures required to promote automotive products and services, including:
  - documentation procedures
- methods used to promote products and services, including:
  - strengths, weaknesses, opportunities and threats (SWOT) analysis
  - marketing and research techniques
  - face-to-face selling techniques
  - active listening and questioning techniques
  - upselling and value adding sales techniques
  - negotiation strategies when dealing with dissatisfied customers
  - loyalty programs and strategies for encouraging repeat business
  - digital communication through catalogues, emails and product information distribution
- customer types, including:

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  - customer buying signals and buyer behaviour
  - individual and cultural differences
- comparable products and services of major competitors including:
  - brand options
  - features of compared product or service
  - price of compared product or service
- workplace procedures relating to promotional processes and marketing activities, including marketing campaigns and advertising materials
- workplace procedures relating to promoting automotive products and services, including:
  - consumer protection
  - automotive industry codes of practice relating to sales
  - advertising codes of practice.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having promoted products and services in an automotive workplace, e.g. sales invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive sales and service workplace or simulated location
- workplace procedures relating to promotional sales activities
- sales material, including product and service information
- commercially realistic range of customers requiring different automotive products and services
- commercially realistic range of automotive retail products and services and associated promotional activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSCA109 Provide vehicle technology information

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to present aftermarket or integrated vehicle technology information and vehicle operating instructions to customers at point-of-sale, delivery or handover. It involves explaining and demonstrating product and operational vehicle technology to a diverse range of customers purchasing a motor vehicle.

The unit applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Sales and Parts, Administration and Management Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Obtain and evaluate aftermarket or integrated vehicle technology information	1.1 Locate and analyse vehicle and aftermarket accessory instructions to determine key operational features 1.2 Access and follow workplace procedures 1.3 Analyse vehicle operating instructions to identify operating procedures 1.4 Review and update information relating to vehicle type and model operating instructions regularly
2. Communicate information to customers	2.1 Explain and demonstrate vehicle features, technology and functions to customers according to dealership procedures 2.2 Simplify and communicate difficult to interpret operating instructions to customer

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Communicate key information to customer in a professional manner
3. Record vehicle handover information	3.1 Record customer vehicle handover information and obtain sign-off according to workplace procedures 3.2 Record information using workplace systems and procedures 3.3 Supply key items and accessories to customer
4. Recommend and implement improvements to vehicle handover	4.1 Seek feedback on vehicle handover techniques and evaluate according to workplace procedures 4.2 Review vehicle handover techniques regularly and implement improvements that maximise effective customer service and repeat business in line with workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets, calibrates or sets vehicle operating equipment and system settings.
Reading	• Interprets written specifications, operating instructions and charts in owner and integrated equipment manuals.

Unit Mapping Information

Supersedes and is equivalent to AURSCA009 Provide vehicle technology information.

Links

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Assessment Requirements for AURSCA109 Provide vehicle technology information

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- provide clear and accurate technology information and operating instructions relating to a vehicle, to at least two different customers at point-of-sale, delivery or handover.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret vehicle technology information, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to provide vehicle technology information, including:
  - safety requirements relevant to vehicle handover
  - documentation procedures
  - housekeeping procedures,
- vehicle technical product knowledge relevant to the operation of vehicle technology systems, including:
  - infotainment systems
  - navigation systems
  - blue tooth systems
  - keyless entry
  - interior adjustment systems
  - basic maintenance requirements
  - spare wheel replacement procedures
  - warning lights
  - vehicle safety cameras

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  - park assist systems
  - climate control system
  - passenger safety systems
  - diesel particulate diffuser and filter system regeneration
- face-to-face and telephone communication techniques, including active listening and questioning
- digital communication skills through email and online resources
- key features of loyalty programs and strategies for encouraging repeat business
- workplace or dealership processes for maintaining customer databases.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having provided vehicle technology information to customers at vehicle point-of-sale or delivery, e.g. sales invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive sales workplace or simulated location
- two different vehicles and integrated technologies
- owner manuals, handbooks and specifications containing vehicle information relating to relevant make and model
- two different customers requiring commercially realistic point-of-sale delivery or handover information regarding vehicle features and technology.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURSCA111 Conduct online transactions in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to conduct online transactions when selling a range of automotive products and services. It also includes dispatching goods and checking processed online transactions.

The unit applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Sales and Parts, Administration and Management Sales and Marketing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Perform online transactions	1.1 Confirm workplace requirements for online sale of automotive products and services 1.2 Secure online personal authentication information according to workplace requirements 1.3 Determine required online functions and processes to supply required automotive products and services 1.4 Report technical difficulties in accessing and using online facilities to online service provider

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ELEMENTS	PERFORMANCE CRITERIA
2. Administer online transactions	2.1 Complete online transaction and dispatch purchased automotive product or service according to terms of online transaction 2.2 Complete records of transactions and maintain according to workplace procedures 2.3 Compare workplace records with online records, and report irregularities according to workplace procedures
3. Review effectiveness of online transactions	3.1 Review automotive products and services rendered to determine quality and timeliness of delivery in relation to advertised profile and content 3.2 Analyse customer feedback against online transaction history to determine customer satisfaction 3.3 Report any issues with service provider to supervisor according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses mathematical operations, including addition, subtraction, multiplication and division, to calculate quantities and prices.
Oral communication	• Articulates requirements clearly using listening and questioning techniques to clarify and confirm understanding • Delivers specific and factual information appropriate to audience and environment.
Reading	• Interprets key information in sales documentation and work instructions to determine required sales action.
Writing	• Uses specific and relevant language when communicating required information • Enters information into sales orders, workplace forms and databases legibly.
Self-management	• Estimates and calculates timeframes for organising delivery and follow-up services.
Technology	• Uses a range of online applications to access, filter and extract information and process online transactions.

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Unit Mapping Information

Supersedes and is equivalent to AURSCA011 Conduct online transactions in an automotive workplace.

Links

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Assessment Requirements for AURSCA111 Conduct online transactions in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- sell different automotive products or services online to at least three different customers
- review the effectiveness of the above online transactions, confirming that quality of products and services delivered met customer expectations.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to conduct online transactions in an automotive workplace, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to conduct online transactions in an automotive workplace, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
- key legal requirements relating to carrying out online transactions, including obligations under the Australian Consumer Law (ACL)
- factors to be considered when calculating final price, including:
  - goods and services tax (GST)
  - sales, discounts and promotions
  - deposits and partial payments

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- types and key features of common electronic bill payment systems, including:
  - biller direct
  - bank aggregator
- procedures for carrying out online transactions, including:
  - following bill payment system processes, including:
    - logging in
    - receiving orders
    - generating accounts
    - generating billing
  - dispatching goods, including tracking goods and confirming delivery
  - creating, maintaining and reconciling sales records
- procedures for reviewing bill payment system, including:
  - assessing customer satisfaction
  - comparing costs of other providers.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having carried out online transactions in an automotive sales and service workplace, e.g. sales invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following should be made available:

- automotive workplace procedures relating to sales
- automotive retail products and services for sale online
- online product or service information, including automotive online sales website
- three different online customers with commercially realistic purchasing requirements
- computer system with internet connection
- stock databases and service delivery calendars.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURSCP101 Provide information to customers on automotive refinishing products

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to provide basic information to customers on automotive refinishing products, including information on surface preparation, fillers, coatings and polishes. It requires knowledge of automotive body repair and refinishing products.

The unit applies to customer service and sales personnel working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Sales and Parts, Administration and Management Sales and Marketing - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Access and interpret information on refinishing products	1.1 Access and interpret information on automotive refinishing products and their applications and limitations according to workplace procedures 1.2 Research and evaluate differences between similar products
2. Identify customer requirements relating to refinishing products	2.1 Greet customer according to workplace customer service standards 2.2 Determine and clarify nature of customer enquiry 2.3 Gather and confirm information relating to customer product requirement with customer

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ELEMENTS	PERFORMANCE CRITERIA
3. Provide information to customer on refinishing products	3.1 Evaluate refinishing products against customer requirements 3.2 Provide or demonstrate information relating to applicable products to satisfy customer requirements and create a buying environment 3.3 Seek advice from product specialist as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Locates required sources of information efficiently • Interprets and compares product numerical information in order to evaluate automotive refinishing products.
Oral communication	• Uses questioning techniques suitable to customer and customer requirement • Conveys technical information effectively using language, tone and pace required for audience and purpose.
Reading	• Accesses and interprets technical information relating to automotive refinishing products from a range of sources.
Technology	• Identifies and attains information on automotive refinishing products through online resources and digital databases • Distributes automotive refinishing product information via digital pathways.

Unit Mapping Information

Supersedes and is equivalent to AURSCP001 Provide information to customers on automotive refinishing products.

Links

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Assessment Requirements for AURSCP101 Provide information to customers on automotive refinishing products

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- access, collate and interpret information relating to at least five different automotive refinishing products
- provide accurate advice on automotive refinishing products to at least three different customers with different product information requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information on automotive refinishing products including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - product specialists
- workplace procedures required to provide information on automotive refinishing products to customers, including:
  - documentation procedures
- refinishing product knowledge, including:
  - features, benefits and limitations of product
  - safety implications of product
  - differences between similar products, including:
    - brand options
    - product features and price
    - warranties
  - automotive coatings
    - fillers

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    - anti-rust material
    - abrasives and buffers
    - polishes and polishing material
    - cleaning materials
  - automotive refinishing techniques, including:
    - repair of minor dents
    - treatment of rust
    - selection and application of fillers
    - surface preparation, including application of primers
    - coats and finishing putties
    - application of top coats and clear coats
    - buffing
    - colour matching
    - mixing procedures for automotive finishes
- workplace-specific information, including:
  - product and merchandise range
  - service range
- workplace procedures specific to automotive refinishing and related products, including procedures for dealing with customers
- key requirements specific to automotive refinishing and related products, including automotive industry codes of practice relating to the sale of vehicle finishes and repair products.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having provided information to customers on automotive refinishing products in an automotive sales and service workplace, e.g. sales invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following should be made available:

- automotive sales and service workplace or simulated workplace
- commercially realistic range of refinishing products
- documentation relating to range of refinishing products, such as inventory lists, price lists, delivery costs and details of available services
- workplace procedures relating to customer service
- three different customers with different information requirements relating to refinishing products.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURTTA104 Carry out servicing operations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to carry out servicing operations. It involves preparing for the task, identifying lubricant requirements, servicing and adjusting vehicle and machinery, reporting the inspection findings, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The servicing operations include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery, motorcycles or outdoor power equipment. The servicing undertaken will vary based upon on occupation of the learner.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to conduct servicing operations	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret servicing information 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for servicing activity and establish serviceability according to workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
2. Identify lubricants and fluid leakage	2.1 Identify lubricants and fluids required for the job according to manufacturer specifications and workplace procedures 2.2 Handle lubricants and fluids according to manufacturer specifications, workplace procedures, and workplace health and safety and environmental requirements 2.3 Identify and report fluid leakages and component faults according to workplace procedures
3. Carry out servicing activities	3.1 Carry out service and adjustments according to manufacturer specifications, workplace procedures, and workplace health and safety and environmental requirements, 3.2 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates appropriate sources of information efficiently.
Reading	• Interprets information from manufacturer and workshop literature when seeking vehicle and machinery service procedures and specifications.
Oral communication	• Clarifies instructions • Reports inspection findings.
Numeracy	• Uses mathematical operations, including addition and subtraction, to determine liquid quantities and calculates service intervals.

Unit Mapping Information

Supersedes and is equivalent to AURTTA004 Carry out servicing operations.

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Assessment Requirements for AURTTA104 Carry out servicing operations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out servicing operations on at least two different vehicles or machinery, in which the work for each must involve:
  - hoisting a vehicle
  - one minor logbook service
  - one major logbook service
  - completing service reports to manufacturer's specifications.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out servicing operations, including:
  - vehicle manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to carry out servicing operations, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures, including service logbooks
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to servicing operations, including procedures for:

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  - lifting and supporting vehicles and machinery, including using a pit
  - isolating and stabilising vehicles or machinery
  - safely handling hazardous oils, fluids and greases
- environmental requirements, including procedures for trapping, storing and disposing of lubricants and fluids released during servicing operations
- service requirements and procedures for vehicle or machinery systems and components applicable to the performance evidence, including:
  - steering and suspension
  - driveline and final drive
  - braking
  - wheels and tyres
  - transmission
  - engine
  - battery and electrical
  - fuel
  - cooling
- types of filters, oils, fluids and greases, including:
  - additives
  - oil, fluid and grease classification
  - viscosity ratings
  - filter types
- oil sampling procedures
- post-service testing procedures, including resetting service interval indicators.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles or machinery that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer servicing specifications
- two different vehicles or machinery to carry out servicing operations
- tools, equipment and materials appropriate for carrying out servicing operations.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURTTA105 Select and use bearings, seals, gaskets, sealants and adhesives

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to select and use bearings, seals, gaskets, sealants and adhesives in the automotive vehicle industry. It involves preparing for the task, selecting and using sealants and adhesives, preparing and installing bearings, seals and gaskets, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry, It includes agricultural machinery, heavy commercial vehicles, light vehicle, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment. The vehicles used will vary based upon the occupation and work context of the learner.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to select and use bearings, seals, gaskets, sealants and adhesives	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret technical information required for the job 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for the job and

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ELEMENTS	PERFORMANCE CRITERIA
	establish serviceability according to workplace procedures
2. Install bearings, seals and gaskets	2.1 Select sealants and adhesives according to manufacturer specifications, workplace procedures, and workplace health and safety requirements 2.2 Apply sealants and adhesives according to manufacturer specifications, workplace procedures, and workplace health and safety requirements 2.3 Store sealants and adhesives according to manufacturer specifications and workplace procedures 2.4 Carry out installation of bearings, seals and gaskets according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets information from manufacturer and workshop literature when seeking specifications and procedures.
Oral communication	• Clarifies instructions • Reports inspection findings • Makes repair recommendations.
Numeracy	• Measures and adjusts automotive components • Calculates deviations and tolerances from manufacturer specifications • Uses basic mathematical operations, including addition and subtraction, to calculate sealant and adhesive volumes.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes

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SKILL	DESCRIPTION
	• Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision tools and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTA005 Select and use bearings, seals, gaskets, sealants and adhesives.

Links

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Assessment Requirements for AURTTA105 Select and use bearings, seals, gaskets, sealants and adhesives

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare and install:
  - at least two of the following bearing types:
    - roller type bearing
    - ball type bearing
    - plain type bearing
  - at least two different gaskets
  - at least two different seals
- select and use at least two different sealants and adhesives.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to select and use bearings, seals, gaskets, sealants and adhesives:
  - manufacturer specifications, procedures and supporting information for preparing, inspecting and installing sealants and adhesives
  - manufacturer specifications, procedures and supporting information for preparing, inspecting and installing bearings, seals and gaskets
- workplace procedures required to select and use bearings, seals, gaskets, sealants and adhesives, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to selecting and using bearings, seals, gaskets, sealants and adhesives, including:
    - procedures for working safely with sealants and adhesives, lubricants and greases
- environmental requirements relating to selecting and using bearings, seals, gaskets, sealants and adhesives, including:
    - procedures for trapping, storing and disposing of excess materials produced when applying sealants and adhesives
    - procedures for trapping, storing and disposing of lubricants and greases released during work processes
- identification and function of:
    - bearings, including:
        - ball
        - roller
        - plain
    - seals, including:
        - lip
        - face
        - O ring
        - square section ring
        - metal surface
    - gaskets, including:
        - treated paper
        - cork
        - composite materials
        - metal, synthetic, rubber, fibre, and nylon
- types, characteristics, uses and limitations of sealants and adhesives, including application techniques
- inspection, service, installation and adjustment procedures, including:
    - bearings, including:
        - roller types
        - ball types
        - plain types
    - seals and sealing surface condition
    - gaskets
- types and applications of bearing lubricants and greases.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bearings, seals, gaskets, sealants and adhesives they have selected and used, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications relating to bearings, seals, gaskets, sealants and adhesives
- vehicle or equipment requiring the application of bearings, seals, gaskets, sealants and adhesives
- bearings, seals, gaskets, sealants and adhesives as specified in the performance evidence
- tools, equipment and material appropriate for installing bearings, seals and gaskets.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA113 Diagnose and repair hydraulic systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair hydraulic systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The hydraulic systems include those in heavy commercial vehicles, marine vessels or outdoor power equipment. This unit does not apply to agricultural or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair hydraulic system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose hydraulic system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair hydraulic system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle or machinery is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications

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SKILL	DESCRIPTION
	• Interprets hydraulic symbols and circuits.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures hydraulic system components • Uses mathematical operations • Calculates deviations and tolerances from manufacturer specifications • Calculates hydraulic system pressures, forces, distances and temperature • Interprets precision measuring equipment.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTA013 Diagnose and repair hydraulic systems.

Links

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Assessment Requirements for AURTTA113 Diagnose and repair hydraulic systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two different hydraulic systems, in which the work must involve removing and refitting or replacing three of the following in each:
  - hydraulic cylinder
  - hydraulic pump
  - hydraulic motor
  - hydraulic valves
  - hydraulic hose.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair hydraulic systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - Australian Standard 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- workplace procedures required to diagnose and repair hydraulic systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing hydraulic systems, including procedures for:
    - using raising, lowering and supporting equipment
    - working with fluids under pressure
    - working with stored pressure hazards
    - working with hot fluid hazards
    - isolating and stabilising machines or vehicles
- environmental requirements relating to diagnosing and repairing hydraulic systems, including procedures for trapping, storing and disposing of hydraulic fluid released from hydraulic systems
- operating principles of hydraulic systems and associated components, including:
    - transmission of energy by hydraulic fluid
    - mechanical advantage
    - hydraulic circuits, including open and closed centred systems
    - temperature, force, pressure, area and flow
- purpose and operation of systems and components, including:
    - reservoirs
    - gas loaded accumulators
    - pumps, including gear and piston
    - valves, including:
        - directional control
        - pressure control
        - flow control
    - linear and rotary actuators
    - hoses, pipes fittings and couplings
    - heat exchangers
    - hydraulic fluids
    - hydraulic symbols and system schematics
- diagnostic testing procedures for hydraulic systems, including:
    - applying and using a flow meter to diagnose faults by carrying out an in-line, bypass or Tee test to evaluate system components
    - visually inspecting hoses, pipes and connectors
    - oil sampling and contamination control
- repair procedures for hydraulic systems, including procedures for removing, replacing, repairing and adjusting hydraulic system components
- post-repair testing procedures for hydraulic systems, including:
    - operational functionality
    - flow testing.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the hydraulic systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer hydraulic system specifications
- two hydraulic systems with faults in the components specified in the performance evidence
- diagnostic tools and equipment for hydraulic systems, including pressure gauges or flow meters
- AS 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- tools, equipment and materials appropriate for repairing and adjusting hydraulic systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTA118 Develop and carry out diagnostic test strategies

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to develop and carry out a diagnostic testing strategy on vehicles, vessels or machinery. It involves confirming the existence of a fault, identifying the required diagnostic information, developing a diagnostic strategy, applying the diagnostic strategy, and reporting conclusions.

The unit applies to those who work in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous – Technical

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop diagnostic testing strategy	1.1 Identify job requirements from workplace instructions 1.2 Confirm existence of fault according to workplace procedures 1.3 Identify systems and components to be tested 1.4 Obtain and interpret information required to develop diagnostic testing strategy 1.5 Develop testing strategy to identify cause of fault 1.6 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures

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ELEMENT	PERFORMANCE CRITERIA
2. Diagnose faults	2.1 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures 2.2 Identify cause of fault through analysis of diagnostic test results. 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task • Applies diagnostic procedures to different vehicles or machinery • Interprets diagnostic test results and comments on usefulness of outputs in determining cause of fault
Reading	• Researches, organises and interprets technical information from manufacturer and workshop literature when seeking specifications and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and/or supervisors • Reports diagnostic findings
Numeracy	• Measures components and uses basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes

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SKILL	DESCRIPTION
	• Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring equipment • Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURTTA018 Carry out diagnostic procedures.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA118 Develop and carry out diagnostic test strategies

Modification History

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Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose faults in three different vehicles or machinery, in which the work must involve:
  - using manufacturer specifications, workplace procedures and information obtained from the customer to develop a diagnostic testing strategy
  - using the diagnostic testing strategy to identify the cause of three of the following faults:
    - loss of vehicle power
    - excessive fuel consumption
    - excessive emissions
    - poor handling
    - poor hydraulic system performance
    - poor pneumatic system performance
    - incorrect mechanical system performance
    - incorrect electrical system performance
    - vibration
    - abnormal noise
  - recording the diagnostic procedures followed with the above vehicles or machinery, the cause or causes of faults and the recommended repairs.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods of gathering information, including:
  - questioning customers
  - effective questioning techniques

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    - research techniques
- workplace procedures relating to diagnosing faults, including:
    - establishing serviceability of tools and equipment
    - documentation procedures
    - housekeeping procedures, including:
        - examination of tools and equipment
        - storage of equipment
        - identification, tagging and isolation of faulty equipment
        - disposal of excess materials
        - recycling procedures
- benefits of following a strategy-based diagnostic procedure
- methods to locate and interpret information required to develop a diagnostic testing strategy, including:
    - customer complaint
    - manufacturer specifications and procedures, including:
        - flow charts
        - diagnosis charts
    - vehicle systems data, including the outputs of diagnostic scan tools
    - inspection of vehicle
- work health and safety (WHS) policies and procedures relating to carrying out diagnostic procedures, including procedures for working safely with the system being tested
- environmental requirements relating to carrying out diagnostic procedures, including procedures for complying with requirements specific to the system being tested
- key features and limitations of common diagnostic tools
- methods of differentiating between fault symptoms and fault causes.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles or machinery in which they have diagnosed faults, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions detailing customer fault complaint
- manufacturer vehicle or machinery specifications

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- three different vehicles or machinery with system faults specified in the performance evidence
- tools, equipment and materials required for diagnosing system faults.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTA121 Diagnose complex system faults

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose faults in complex vehicle, vessels or machinery systems to determine the repair action necessary to restore system performance. It involves confirming the existence of a complex system fault, developing a diagnostic testing strategy, diagnosing the cause of the fault reporting conclusions, and making repair recommendations. A complex system integrates two or more automotive systems, or incorporates three or more mechanical, hydraulic, pneumatic, electrical or electronic sub-systems. Examples include electronically controlled automatic transmissions, anti-lock braking systems, and engine management systems integrating ignition, fuel and transmission control systems.

The unit applies to those who work in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous - Technical

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement regarding complex system fault	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify function and correct operation of system with fault 1.4 Identify other systems affected by fault
2. Develop testing strategy	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy,

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ELEMENT	PERFORMANCE CRITERIA
	including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures 2.4 Identify hazards and environmental issues associated with diagnosis activity, assess potential risks and implement control measures in line with workplace policies and procedures
3. Perform diagnosis	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures.

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates and evaluates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings
Reading	• Organises and interprets technical information from manufacturer and workshop literature when seeking specifications and procedures

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors • Reports diagnostic findings, and makes repair recommendations
Numeracy	• Measures components and uses basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring equipment • Uses specialised integrated system diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTA021 Diagnose complex system faults.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA121 Diagnose complex system faults

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose complex system faults on three different vehicles, machinery or vessels in which the work must involve the following complex faults, each on a separate vehicle, piece of machinery or vessel:
  - one fault that is in a complex system that integrates two or more automotive systems
  - one fault that incorporates three or more mechanical, hydraulic, pneumatic, electrical or electronic sub-systems
- develop a testing strategy to diagnose the cause of the complex faults in the work above.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults, including:
  - manufacturer specifications and other technical information
- workplace procedures required to diagnose complex faults, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex system faults in vehicles, vessels or machinery, including:

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    - working safely with the systems being tested
    - selecting and using personal protective equipment (PPE)
    - safely using tools and equipment
- types and operation of complex systems, including:
    - systems that integrates two or more automotive systems
    - systems that incorporate three or more mechanical, hydraulic, pneumatic, electrical or electronic sub-systems
- diagnostic procedures for complex systems, including stages within the diagnostic procedure
- methods of gathering information on complex system faults, including:
    - customer questioning techniques to provide a full overview of all faults and conditions under which they occur
- types and applications of diagnostic flow charts
- key features and limitations of diagnostic tools, including:
    - multimeters
    - scan tools, including:
        - diagnosis trouble codes (DTC) and the conditions that caused the code to be set
        - live data
        - snap shots
    - oscilloscopes
    - mechanical, hydraulic and pneumatic test equipment
- methods of differentiating between fault symptoms and fault cause.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle or machinery complex system faults that they have diagnosed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer system specifications
- three different vehicles, vessels or machinery that have the complex system faults specified in the performance evidence
- tools, equipment and materials appropriate for diagnosing complex system faults in vehicles, vessels or machinery.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTA125 Diagnose complex faults in vehicle integrated stability control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in vehicle integrated stability control systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

This unit applies to those working in the automotive service and repair industry. The stability control systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery.
Reading	• Identifies, organises and interprets technical information

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SKILL	DESCRIPTION
	from manufacturer and workshop literature when seeking integrated stability control system specifications and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures integrated stability control system components and uses basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interpret units, such as amperes, ohms, and volts.
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTA025 Diagnose complex faults in vehicle integrated stability control systems.

Links

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Assessment Requirements for AURTTA125 Diagnose complex faults in vehicle integrated stability control systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in the integrated stability control systems of three different vehicles or machinery in which the work for at least two of the stability control systems must involve a different type of complex fault from among the following:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.
- develop a testing strategy in the course of the above work to diagnose the cause of the complex faults in the above three vehicles or machinery.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in vehicle integrated stability control systems, including:
  - vehicle integrated stability control systems manufacturer specifications
- workplace procedures required to diagnose complex faults in vehicle integrated stability control systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in vehicle integrated stability control systems, including procedures for:
    - lifting and supporting motorcycles
- environmental requirements relating to vehicle integrated stability control systems
- types of complex faults relating to vehicle integrated stability control systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- types and key features of vehicle integrated stability control systems, including:
    - anti-lock braking systems (ABS)
    - traction control systems
    - electronic stability control (ESC) systems
- testing procedures for vehicle integrated stability control systems, including procedures for:
    - vehicle dynamic and static testing
    - component failure analysis
- types, functions, operation and limitations of diagnostic testing equipment required to diagnose complex faults in vehicle integrated stability control systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - freeze frame data
    - waveforms
    - vehicle continuous and non-continuous monitored systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle integrated stability control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- workplace instructions
- manufacturer vehicle integrated stability control system specifications
- three different vehicles or machinery with complex faults in their integrated stability control systems
- vehicle integrated stability control system diagnostic equipment, including scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in vehicle integrated stability control systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTA126 Diagnose complex faults in electronic over hydraulic systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in electronic over hydraulic systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

This unit applies to those working in the automotive service and repair industry. The electronic over hydraulic systems include those of agricultural machinery, heavy commercial vehicles, marine vessels or mobile plant machinery, which may be wheeled or track type machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENTS	PERFORMANCE CRITERIA
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery.

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SKILL	DESCRIPTION
Reading	• Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking vehicle or machine hydraulic systems system specifications and procedures.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures electronic over hydraulic system components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTA026 Diagnose complex faults in electronic over hydraulic systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA126 Diagnose complex faults in electronic over hydraulic systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in at least three different electronic over hydraulic systems
- develop a testing strategy in the course of the above work to diagnose the cause of at least two of the following complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in electronic over hydraulic systems, including:
  - electronic over hydraulic systems system manufacturer specifications
- workplace procedures required to diagnose complex faults in electronic over hydraulic systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - safe disposal of materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing complex faults in electronic over hydraulic systems, including procedures for working with high pressure fluid systems
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from hydraulic systems
- types of complex faults relating to electronic over hydraulic systems, including:
  - intermittent
  - multi-system
  - introduced as a result of system repair
  - indirect, caused by the influence of external systems
- types, functions and operation of electronic over hydraulic systems, including:
  - input sensors
  - output actuators
  - computer systems
- testing procedures for electronic over hydraulic systems, including procedures for:
  - electronic control analysis
  - component wear analysis
  - system operation analysis
- types, and key features of diagnostic testing equipment required to diagnose complex faults in electronic over hydraulic systems, including:
  - scan tool
  - vacuum gauge
  - oil pressure gauge
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
  - vehicle continuous and non-continuous monitored systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electronic over hydraulic systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer electronic over hydraulic system specifications
- three different electronic over hydraulic systems with complex faults
- electronic over hydraulic system diagnostic equipment, including:
  - scan tool
  - vacuum gauge
  - oil pressure gauge
- tools, equipment and materials appropriate for diagnosing complex faults in electronic over hydraulic systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA127 Carry out basic vehicle servicing operations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to carry out basic vehicle servicing operations. It involves preparing for the task, selecting the correct equipment and servicing the major vehicle systems according to manufacturer servicing procedures and specifications, recording the findings and completing workplace processes. It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan to carry out basic vehicle servicing operations	1.1 Identify task requirements and vehicle to be serviced from task instructions 1.2 Obtain and interpret basic vehicle servicing information 1.3 Identify hazards associated with the work, assess potential risks and report to workplace supervisor 1.4 Implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for servicing activity

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ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to manufacturer specifications and workplace procedures
2. Carry out basic vehicle servicing operations	2.1 Carry out basic vehicle servicing operations according to workplace procedures, manufacturer specifications and workplace health and safety and environmental requirements 2.2 Identify and record worn vehicle components and issues requiring further exploration according to workplace procedures 2.3 Record basic vehicle servicing operation procedures according to workplace procedures
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets metric and imperial systems of measurement • Interprets mathematical information, including charts and drawings • Uses tools and measuring equipment, including gauges • Uses basic mathematical operations, including addition, subtraction, multiplication and division, to calculate volumes and ratios.
Oral communication	• Participates effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Problem-solving	• Identifies potential or actual hazards and take action to minimise risk • Refers problems that cannot be readily resolved and seeks

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SKILL	DESCRIPTION
	assistance from workplace supervisor.
Reading	• Selects and interprets key information from manufacturer specifications, workplace health and safety requirements and workplace procedures to perform basic vehicle servicing operations • Selects and interprets key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Self-management	• Recognises own limitations when selecting and using tools and equipment and seek timely advice.
Technology	• Sets up and operates specialised equipment and tools.

Unit Mapping Information

Supersedes and is equivalent to AURTTA027 Carry out basic vehicle servicing operations.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA127 Carry out basic vehicle servicing operations

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- perform basic servicing operations on at least two different operational vehicles, in which the work for each must involve servicing each of the following:
  - engine and exhaust system
  - drive belt
  - cooling system
  - transmission and final drive
  - tyres, suspension and steering
  - fuel and intake system
  - electrical system
  - braking system
  - body fittings and pedal rubbers.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out servicing operations, including:
  - vehicle manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to carry out basic vehicle servicing operations, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) and environmental requirements relating to basic vehicle servicing operations, including:
    - use of personal protective equipment (PPE), including safety glasses, ear protection and safety footwear
    - use of hand tools
    - use of lifting equipment
    - safety data sheets (SDS)
    - procedures for handling, storing and disposing of used oil, lubricants, coolants, transmission and brake fluids
    - reasons for servicing vehicles
- basic vehicle servicing procedures, including:
    - servicing the engine:
        - checking for leaks, worn or loose fittings, cracks or other damage
        - changing the engine oil
        - changing the oil filter
    - servicing the drive belt:
        - checking for cracks, fraying, oil soaking and glazing at the belt to pulley contact area
        - adjusting the belt
    - servicing the cooling system:
        - checking for leaks, signs of corrosion, damaged or cracked hoses, worn or loose fittings
        - topping up the coolant
    - servicing transmission and final drive systems:
        - checking for leaks, worn or loose fittings, cracks or other damage
        - checking and topping up transmission and final drive lubricant level
        - topping up the clutch master cylinder fluid
    - servicing the tyres and suspension and steering system:
        - checking for leaks, splits in rubber boots, worn or loose fittings, and tyre wear
        - adjusting air pressure
        - lubricating ball joints
        - topping up power steering reservoir fluid
    - servicing the fuel intake system:
        - checking for leaks, worn or loose fittings, cracks or other damage
        - replacing air filters
    - servicing the electrical system:
        - checking the lighting system
        - checking and topping up the battery

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- servicing the brakes:
  - checking for leaks, wear, excessive heat damage, cracks or other damage
  - topping up the master cylinder fluid
- servicing body fittings and pedal rubbers
- other tasks, including checking:
  - windscreen wipers
  - windscreen washers (fluid level)
  - heating, ventilation and air-conditioning (HVAC) operation
  - body panels
  - exhaust system
  - mirrors
  - condition of foot pedal rubbers
- hand and power tools and equipment used in vehicle servicing.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have serviced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two vehicles for servicing
- automotive hand and power tools and lifting and supporting equipment
- automotive fluids and oils, including:
- engine oil
- transmission oil
- brake fluid.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTB101 Inspect and service braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service braking systems according to manufacturer specifications. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation. The servicing undertaken will vary based on the work context.

The unit applies to those working in the automotive service and repair industry. The braking systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, motorcycles, mobile plant machinery, outdoor power equipment or trailers. The braking systems may be hydraulic, air over hydraulic, air, mechanical, or hand and parking braking systems.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical - Brakes

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service braking system	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret servicing information 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for servicing activity and establish serviceability according to workplace

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ELEMENTS	PERFORMANCE CRITERIA
	procedures
2. Inspect braking system	2.1 Carry out inspection according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 2.2 Compare inspection results with manufacturer specifications 2.3 Report inspection findings and recommendations for necessary repairs according to workplace procedures
3. Service braking system	3.1 Carry out service and adjustments according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 3.2 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets information from manufacturer and workshop literature when seeking service procedures and specifications relating to braking systems.
Oral communication	• Clarifies instructions.
Numeracy	• Measures brake components and use basic mathematical operations, including addition and subtraction, • Calculates deviations and tolerances from manufacturer specifications • Interprets measuring equipment scales.
Technology	• Uses measuring equipment.
Problem solving	• Refers problems outside area of responsibility to required person.

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Unit Mapping Information

Supersedes and is equivalent to AURTTB001 Inspect and service braking systems.

Links

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Assessment Requirements for AURTTB101 Inspect and service braking systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service the brakes of at least two different vehicles or machinery, in which the work for each must involve inspecting and servicing at least one of the following:
  - disc braking system
  - drum braking systems
- complete dynamic and static testing.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service brakes, including:
  - vehicle manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service brakes, including:
  - inspecting and servicing brakes
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to inspecting and servicing braking systems, including procedures for:

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  - lifting and supporting vehicles or machinery
  - managing and controlling brake dust and brake fluids
- environmental requirements relating to inspecting and servicing braking systems, including procedures for:
  - trapping, storing and disposing of brake dust and brake fluid released from braking systems
- identification and function of major braking components, including:
  - discs, pads and callipers
  - drums, brake linings, wheel cylinders and hydraulic components
  - master cylinder
  - hydraulic and vacuum brake booster
  - diesel engine vacuum brake booster pump
  - electric and manual park braking systems
- basic operation of braking systems, including:
  - hydraulic braking systems
  - mechanical braking systems
  - air over hydraulic systems
  - air braking systems
- types, applications and testing of brake hydraulic fluids
- inspection procedures for braking system components, including:
  - component wear analysis
  - brake fluid testing
- service and adjustment procedures for braking systems, including:
  - brake bleeding
  - brake adjustment
  - park brake adjustment
- post-service testing procedures for braking systems, including static and dynamic testing.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- manufacturer braking system specifications
- two different vehicles or machinery with disc and drum braking systems requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing braking systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTC103 Diagnose and repair cooling systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the cooling systems of vehicles. The systems used vary based on the work context. It involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The cooling systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical – Cooling Systems

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair cooling system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose cooling system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair cooling system	3.1 Identify required information for repair activity 3.2 Identify required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Refill system with required coolant and water mix according to manufacturer specifications, workplace procedures and workplace health and safety and environmental requirements 3.5 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task

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SKILL	DESCRIPTION
Reading	• Interprets information from manufacturer and workshop literature when seeking cooling system specifications and procedures
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Interprets pressure gauges and metric units of pressure • Uses mathematical operations to calculate volumes from ratios
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.

Unit Mapping Information

Supersedes and is equivalent to AURTTC003 Diagnose and repair cooling systems.

Links

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Assessment Requirements for AURTTC103 Diagnose and repair cooling systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in two different cooling systems, in which the work must involve:
  - removing and refitting or replacing at least one of the following components:
    - radiator
    - water pump
    - engine core plugs
  - removing and refitting or replacing at least two of the following components:
    - thermostat
    - radiator hoses
    - heater hoses
    - heater core
    - heater valve
    - heat exchanger
    - engine fan system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair cooling systems, including:
  - information provided by customer and supervisors
  - cooling system manufacturer specifications
- workplace procedures required to diagnose and repair cooling systems, including:
  - establishing the serviceability of tools and equipment

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    - documentation procedures
    - housekeeping procedures, including:
        - examination of tools and equipment
        - storage of equipment
        - identification, tagging and isolation of faulty equipment
        - safe disposal of materials
        - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing cooling systems, including:
    - procedures for handling hot pressurised cooling systems
- environmental requirements relating to diagnosing and repairing cooling systems, including procedures for trapping, storing and disposing of fluids released from cooling systems
- operating principles of cooling systems and associated components, including:
    - effects of heat, including changes of temperature, colour, state and volume of substances
    - heat transfer, including conduction, convection and radiation
    - air cooled systems
    - liquid cooled systems
- purpose and operation of the following components of cooling systems and components, including:
    - engine coolant types and composition
    - water pumps
    - thermostats and bypass systems
    - mechanical, hydraulic, pneumatic and electric cooling fan systems
    - radiators
    - pressure caps
    - heat exchangers
    - expansion tanks
    - hoses
    - drive belts
    - temperature sensors and gauges
- diagnostic testing procedures for cooling systems, including testing procedures for:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - freeze frame data
        - waveforms
    - effects of corrosion, cavitation and electrolysis
    - transient voltage
    - engine coolant

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  - cooling system pressure
  - combustion leak
  - cooling fan system
  - thermostat
  - temperature sensors/senders
  - infra-red thermal devices
  - cooling system hose
  - water pump
- repair procedures for cooling systems, including procedures for bleeding coolant systems
- post-repair testing procedures for cooling systems, including:
  - fan system operation
  - thermostat operation
  - checks for leaks.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the cooling systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer cooling system specifications
- two different vehicles or machinery with cooling system faults
- diagnostic equipment for cooling systems
- tools, equipment and materials appropriate for repairing cooling systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTE104 Inspect and service engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service engines. It involves preparing for the task, inspecting the engine, reporting the inspection findings, servicing and adjusting the engine, and completing workplace processes and documentation. The servicing undertaken will vary based on the work context.

The unit applies to those working in the automotive service and repair industry. The engines include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant or motorcycles. The unit does not apply to outdoor power equipment engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service engine	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret servicing information 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for servicing activity and establish serviceability according to workplace procedures
2. Inspect engine	2.1 Carry out inspection according to manufacturer

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ELEMENTS	PERFORMANCE CRITERIA
	specifications, workplace procedures, workplace health and safety and environmental requirements 2.2 Compare inspection results with manufacturer specifications 2.3 Report inspection findings and recommendations for necessary repairs according to workplace procedures
3. Service engine	3.1 Carry out service and adjustments according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 3.2 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets information from manufacturer and workshop literature when seeking engine service procedures and specifications.
Oral communication	• Clarifies instructions.
Numeracy	• Calculates liquid volumes and service schedule intervals, using mathematical operations, including addition and subtraction.

Unit Mapping Information

Supersedes and is equivalent to AURTTE004 Inspect and service engines.

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Links

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Assessment Requirements for AURTTE104 Inspect and service engines

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service the engines of a least two different vehicles or machinery, completing the following in the course of the above work:
  - inspecting a vehicle for oil and fluid leaks
  - reporting any identified abnormal engine noises
  - inspecting ancillary components
  - replacing engine oil and filters
  - starting up and running engine to operating temperature
  - checking for leaks.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service engines, including:
  - vehicle manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service engines, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to inspecting and servicing engines, including procedures for working with:
  - rotating and hot components
  - engine oils
  - high energy ignition and charging systems
  - high voltage injectors
  - lifting and supporting equipment, including pits
  - hoists, including:
    - two-point hoists
    - four-point hoists
    - jack hoists
    - procedures for daily inspection of hoist
- environmental requirements relating to inspecting and servicing engines, including procedures for:
  - trapping, storing and disposing of fluids released from engines
  - identifying and handling oils and fluids
- identification and function of major engine components, including:
  - cylinder block and head
  - piston and connecting rod
  - crankshaft
  - valve train
  - manifolds
  - ports and reed valve
- identification and function of engine systems, including:
  - lubrication
  - cooling system
  - fuel system
  - air system
- basic operation of spark ignition engines and compression ignition engines, including:
  - two-stroke spark ignition engines
  - four-stroke spark ignition engines
  - four-stroke compression ignition engines
- types of engine configurations, including:
  - two-stroke spark ignition engines
  - four-stroke spark ignition engines
  - four-stroke compression ignition engines
- types and applications of engine oils and filters
- difference between mineral and synthetic fluids
- inspection procedures for engines, including:
  - oil and fluid leaks

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  - ancillary components, including:
    - mountings
    - belts, pulleys and hoses
- service and adjustment procedures for engines, including:
  - adjusting or replacing engine components
  - replacing oil
  - replacing filter
- post-service testing procedures for engines.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- two different vehicles or machinery with engines requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing engines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTF101 Inspect and service petrol fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service vehicle petrol fuel systems. It involves preparing for the task, inspecting the fuel system for leaks, inspecting the air filter, reporting the inspection findings, servicing and adjusting the petrol fuel system, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The petrol fuel systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery, motorcycles or outdoor power equipment. The servicing operations undertaken may vary based on the occupation of the learner.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical - Fuel Systems

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element*
1. Prepare to inspect and service petrol fuel system	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret servicing information 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for servicing activity and establish serviceability according to workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
2. Inspect petrol fuel system	2.1 Carry out inspection according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 2.2 Compare inspection results with manufacturer specifications 2.3 Report inspection findings for necessary repairs according to workplace procedures
3. Service petrol fuel system	3.1 Carry out service and adjustments according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 3.2 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Carry out final inspection to ensure work meets workplace expectations and confirm vehicle or machinery is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Locates information from manufacturer and workshop literature when seeking service procedures and specifications relating to petrol fuel systems.
Oral communication	• Clarifies instructions • Makes repair recommendations.
Numeracy	• Calculates liquid volumes and service schedule intervals using basic mathematical operations, including addition and subtraction.
Problem solving	• Refers to problems outside area of responsibility to required person.

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Unit Mapping Information

Supersedes and is equivalent to AURTTF001 Inspect and service petrol fuel systems.

Links

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Assessment Requirements for AURTTF101 Inspect and service petrol fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service the petrol fuel systems of at least two different vehicles or machinery in which the work for each must involve all of the following:
  - pre-inspection of all petrol fuel system components
  - servicing air filters
  - replacing fuel filters.
  - post-inspection of all petrol fuel system components.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service petrol fuel systems, including:
  - vehicle manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service petrol fuel systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to inspecting and servicing petrol fuel systems, including procedures for working with:

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    - stored fuel pressure
    - flammable liquids
- environmental requirements relating to inspecting and servicing petrol fuel systems, including procedures for:
    - trapping, storing and disposing of flammable liquids released from fuel systems
    - disposing of filters.
- inspection procedures for petrol fuel systems, including:
    - inspecting components for damage and leaks
    - inspecting air filter and air intake housing and ducting for blockage or damage
- service and adjustment procedures for petrol fuel systems, including:
    - replacing fuel filter
    - cleaning or replacing air filter and checking air intake housing and ducting for damage
    - checking and adjusting base idle speed as required
    - fuel pressure testing as required
- post-service testing procedures for petrol fuel systems, including:
    - starting up and running system to full operation
    - testing system for leaks and correct operation
- identification, function and basic operation of petrol fuel system components, including:
    - types and applications of fuels, including petroleum and biofuels
    - fuel tank, cap and lines
    - fuel filters
    - fuel pumps, including:
        - mechanical
        - electrical
    - electronic control unit and sensors
    - fuel injection system components
    - accelerator pedal or control lever.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the petrol fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- workplace instructions
- manufacturer petrol fuel system specifications
- two different vehicles or machinery with petrol fuel systems requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing petrol fuel systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTF102 Inspect and service diesel fuel injection systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service diesel fuel injection systems. It involves preparing for the task, inspecting the fuel injection system for leaks, inspecting the air filter, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The diesel fuel injection systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, motorcycles, mobile plant or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical – Fuel Systems

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service diesel fuel injection system	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret servicing information 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools, equipment and materials for serviceability
2. Inspect diesel fuel injection system	2.1 Carry out inspection according to manufacturer specifications, workplace procedures, and safety and environmental requirements 2.2 Compare inspection results with manufacturer specifications

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Report inspection findings according to workplace procedures
3. Service diesel fuel injection system	3.1 Carry out service and adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Carry out post-service testing according to workplace procedures, including engine start-up check for leaks and operation
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Calculates liquid volumes and service schedule intervals using basic mathematical operations, including addition and subtraction.
Oral communication	• Clarifies instructions.
Reading	• Interprets information from manufacturer and workshop literature when seeking service procedures and specifications relating to diesel fuel injection systems.
Problem solving	• Refers problems outside area of responsibility to required person.

Unit Mapping Information

Supersedes and is equivalent to AURTTF002 Inspect and service diesel fuel injection systems.

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Assessment Requirements for AURTTF102 Inspect and service diesel fuel injection systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service a diesel fuel injection system on at least two different vehicles or machines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service diesel fuel injection systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service diesel fuel injection systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures, including:
    - inspection findings such as recommendations for required repairs or adjustments
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
    - work health and safety (WHS) requirements relating to inspecting and servicing diesel fuel injection systems, including procedures for:
  - working with high pressure diesel fuel systems

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    - working with high voltage diesel fuel injectors
    - working with stored fuel pressures
    - engine start-up and shut-down
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from fuel systems
- application, purpose and operation of air filter and air intake housing and ducting
- identification and function of mechanically controlled diesel fuel injection system and components, including:
    - types and applications of fuels, including diesel and biofuels
    - fuel tank and lines
    - fuel filters and sedimenter filters
    - fuel supply pumps
    - injection pumps, including:
        - in-line
        - rotary
    - injector pipes
    - injectors
    - overflow or leak-off pipes
- identification and function of electronic diesel fuel injection systems and common rail fuel systems and components, including:
    - fuel tank and lines
    - fuel filters and sedimenter filter
    - fuel supply pumps
    - injection pumps
    - pressure and injector pipes
    - fuel rail
    - injectors
    - overflow or leak-off pipes
    - electronic control unit and sensors
- inspection procedures for diesel fuel injection systems, including procedures relating to leaks, damaged piping and sedimentary sight glasses
- service and adjustment procedures for diesel fuel injection systems, including:
    - servicing sediment filters
    - replacing fuel filters
    - bleeding fuel system as required
    - servicing air filter and air intake housing and ducting
    - engine speed adjustments as required and operational testing
- post-service testing procedures for diesel fuel injection system.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the diesel fuel injection systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer diesel fuel injection system specifications
- two different vehicles or machinery with diesel fuel injection systems requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing diesel fuel injection systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTF105 Diagnose and repair engine forced-induction systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in engine forced-induction systems. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The engine forced-induction systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical – Fuel Systems

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair forced-induction system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace

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ELEMENT	PERFORMANCE CRITERIA
	policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose forced-induction system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair forced-induction system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task

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SKILL	DESCRIPTION
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures engine forced-induction components • Uses mathematical operations • Carries out calculations such as areas, volumes, tolerances and deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring equipment

Unit Mapping Information

Supersedes and is equivalent to AURTTF005 Diagnose and repair engine forced-induction systems.

Links

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Assessment Requirements for AURTTF105 Diagnose and repair engine forced-induction systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a turbocharger fault in an engine forced-induction system
- diagnose and repair a fault in at least two of the following components of engine forced-induction systems:
  - variable turbocharger
  - compound turbocharger
  - waste-gate actuator
  - intercooler
  - supercharger.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair engine forced-induction systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair engine forced-induction systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing engine forced-induction systems, including procedures for working with high temperature exhaust and intake system components
- environmental requirements relating to diagnosing and repairing engine forced-induction systems, including those relevant to exhaust gases such as hydrocarbons
- purpose and operation of engine forced-induction systems, including procedures for testing:
    - turbochargers, including:
        - twin scroll
        - twin turbocharger
        - turbo compounding
        - variable geometry turbocharger
        - waste-gate operation
        - lubrication and cooling
        - intercooler operation, including air to air and water to air
    - supercharger operation
- diagnostic testing procedures for engine forced-induction systems, including:
    - intake manifold pressure and vacuum testing
    - intake and exhaust system leak testing
    - turbo boost air pressure
    - intercooler pressure and temperature checks, types include air to air and air to water
    - oil supply
    - oil return to sump
    - turbocharger waste-gate testing
    - visual inspection for oil leakage
    - turbine rotating assembly end float and axial movement
- repair procedures for engine forced-induction systems, including procedures for:
    - removing and replacing turbochargers
    - testing, removing, replacing and adjusting waste-gates
- post-repair testing procedures for engine forced-induction systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine forced-induction systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine forced-induction system specifications
- one vehicle or machinery with engine forced-induction systems and a fault in turbocharger
- diagnostic equipment for engine forced-induction systems, including dial indicator, vacuum and pressure gauges, and temperature gauges
- tools, equipment and materials appropriate for repairing engine forced-induction systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTF106 Diagnose and repair petrol carburettor systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the petrol carburettor systems of vehicles. The systems used vary based on the work context. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The petrol carburettor systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical – Fuel Systems

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair petrol carburettor system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose petrol carburettor system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair petrol carburettor system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures petrol carburettor system components • Uses mathematical operations • Calculates distances, areas, volumes and tolerances • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTF006 Diagnose and repair petrol carburettor systems.

Links

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Assessment Requirements for AURTTF106 Diagnose and repair petrol carburettor systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in each of the following different petrol carburettor systems fitted to different vehicles or engines:
  - one type of variable venturi carburettor
  - one type of multi-barrel carburettor
  - one simple carburettor.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair petrol carburettor systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair petrol carburettor systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing petrol carburettor systems, including procedures for working with working with flammable petrol fuel
- environmental requirements relating to diagnosing and repairing petrol carburettor systems, including procedures for trapping, storing and disposing of fluids released from fuel system
- operating principles of petrol carburettor systems, including:
  - fuel atomisation
  - air-fuel ratios and combustion cycles
  - detonation and pre-ignition
  - venturi action
- purpose and operation of petrol carburettor systems and components, including:
  - carburettor systems, including:
    - float system
    - idle system
    - fast idle system
    - main system
    - choke system
    - power system
    - accelerating system
  - single barrel carburettor operation, including:
    - mixture correction, including air-bleed, compensating jet, and metering rod mixture correction
  - manual and automatic choke operation
  - multi-barrel carburettors, including:
    - two-barrel and four-barrel carburettors
    - two-stage carburettors, including vacuum and mechanical control of second stage
- diagnostic testing procedures for petrol carburettor systems, including procedures for:
  - fuel pump pressure, volume and vacuum testing
  - air-leak testing
  - cold-start enrichment testing
  - exhaust gas analysis
- repair procedures for petrol carburettor systems, including procedures for:
  - installing fuel pumps
  - dismantling, cleaning, repairing and reassembling carburettors
  - removing, replacing and adjusting carburettors
- post-repair testing procedures for petrol carburettor systems.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the carburettors that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer vehicle petrol carburettor system specifications
- three different vehicles or engines with faults in the petrol carburettor systems specified in the performance evidence
- diagnostic equipment for petrol carburettor systems, including an exhaust gas analyser,
- tools, equipment and materials appropriate for repairing petrol carburettor systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTK102 Use and maintain tools and equipment in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to select, use, maintain and store tools and equipment in an automotive workplace.

The unit applies to those who work in all sectors of the automotive industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical – Tools and Equipment

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Select and use tools and equipment	1.1 Determine job requirements from workplace instructions 1.2 Select tools and equipment to meet job requirements 1.3 Check tools and equipment for serviceability according to manufacturer and workplace procedures 1.4 Use tools, equipment and personal protective equipment (PPE) according to manufacturer procedures and safety requirements
2. Service, maintain and store workplace tools and equipment	2.1 Service, adjust and maintain tools and equipment according to workplace and manufacturer schedules and procedures to ensure safe and accurate operation, within scope of own responsibility 2.2 Clean remaining tools and equipment, check for

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ELEMENT	PERFORMANCE CRITERIA
	serviceability, and store according to workplace procedures 2.3 Tag and remove damaged or worn tools and equipment and report according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Identifies scope of own responsibility
Reading	• Interprets work health and safety (WHS) procedures in workplace and manufacturer literature • Interprets information from manufacturer instruction manuals
Numeracy	• Identifies different size metric and imperial tools • Understands the progression of fractions in imperial tools • Uses basic mathematical processes, including addition, subtraction, multiplication and division, to calculate distance, area and volume
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes

Unit Mapping Information

Supersedes and is equivalent to AURTTK002 Use and maintain tools and equipment in an automotive workplace.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTK102 Use and maintain tools and equipment in an automotive workplace

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- use and maintain workplace tools and equipment, which must include the following:
  - five different hand tools
  - two different power tools
  - two different air tools
  - one piece of vehicle lifting equipment
  - one piece of vehicle supporting equipment.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- work health and safety (WHS) requirements relating to using and maintaining workplace tools and equipment, including procedures for:
  - using specific tools and equipment
  - selecting and using personal protective equipment (PPE)
- key functions, limitations and operating procedures for hand and power tools, including:
  - sockets and ratchets
  - spanners, including ring spanners, open-ended spanners, combination spanners and flare nut spanners
  - wrenches, including torque wrenches and adjustable wrenches
  - oil filter removal tools
  - allen keys
  - screwdrivers, including impact screwdrivers
  - pliers, including combination, adjustable, long nose, snap ring, side cutting and vice grip pliers

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    - hammers
    - chisels and punches
    - hacksaws
    - files
    - bench grinders
    - presses
    - impact guns
    - air ratchets and blowguns
- key features and limitations of workplace equipment, including:
    - vehicle lifting and supporting equipment, including:
        - jacks, including air jacks
        - jack stands
        - vehicle hoists
    - fasteners, including:
        - bolts
        - washers
        - nuts
        - studs
        - screws
    - specialised tools, including:
        - screw extractors
        - stud installation and removal tools
        - gear and bearing pullers
        - sealing and adhesive equipment
- procedures for selecting tools and equipment
- identification and tagging procedures for faulty tools and equipment
- basic maintenance and storage procedures for tools and equipment.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the tools and equipment that they have used and maintained, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- workplace instructions
- workplace hand and power tools and equipment as specified in the performance evidence
- PPE required to use workplace tools and equipment
- vehicles, components or materials that require the use of tools and equipment
- material relevant to maintaining workplace tools and equipment, including:
  - tool and equipment operating instructions or manuals
  - relevant tool and equipment adjusting or calibration equipment
  - tagging material.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTL102 Diagnose and repair CNG fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the compressed natural gas (CNG) fuel systems of vehicles or machinery. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The CNG fuel systems include those in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical – Alternative Fuels

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENT	PERFORMANCE CRITERIA
1. Prepare to diagnose and repair CNG fuel system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose CNG fuel system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair CNG fuel system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, Australian Standards, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, Australian Standards, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Interprets Australian standards relating to repairing CNG fuel systems • Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures CNG fuel system components • Uses mathematical operations, including addition, subtraction, multiplication and division • Calculates distances, areas, volumes, tolerances and deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses precision measuring equipment

Unit Mapping Information

Supersedes and is equivalent to AURTTL002 Diagnose and repair CNG fuel systems.

Links

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Assessment Requirements for AURTTL102 Diagnose and repair CNG fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two vehicles with different compressed natural gas (CNG) fuel systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair CNG fuel systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - Australian Standard - AS/NZ 2739 Natural gas (NG) fuel systems for vehicle engines
- workplace procedures required to diagnose and repair CNG fuel systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing CNG fuel systems, including procedures for:
  - working with extremely cold and flammable gas
  - storing CNG

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- environmental requirements relating to diagnosing and repairing CNG fuel systems, including procedures for preventing loss of gas to atmosphere
- purpose and operation of CNG fuel systems and components, including:
  - mixers
  - regulators
  - fuel lock-off valves
  - filters
  - tanks
  - control valves and switches
- diagnostic testing procedures for CNG fuel systems, including procedures for testing:
  - mixers
  - regulators
  - fuel lock-off valves
  - electronic control valves and switches
- repair procedures for CNG fuel systems, including procedures for removing, replacing and adjusting the systems
- post-repair testing procedures for CNG fuel systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the CNG fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer vehicle CNG fuel system specifications
- AS/NZ 2739 Natural gas (NG) fuel systems for vehicle engines
- two vehicles with different CNG fuel systems with faults
- diagnostic equipment for CNG fuel systems, including exhaust gas analyser
- tools, equipment and materials appropriate for repairing CNG fuel systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURTTL104 Inspect and service LNG fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service liquefied natural gas (LNG) fuel systems. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The LNG fuel systems include those of agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Mechanical Miscellaneous Technical – Alternative Fuels

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service LNG fuel system	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret servicing information 1.3 Identify hazards associated with work and manage risks according to safety and environmental requirements 1.4 Select and check tools, equipment and materials for serviceability
2. Inspect LNG fuel system	2.1 Carry out inspection according to manufacturer specifications, workplace procedures, safety requirements, and AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Compare inspection results with manufacturer specifications 2.3 Develop and report recommendations for necessary repairs or adjustments according to workplace procedures
3. Service LNG fuel system	3.1 Carry out service and adjustments according to manufacturer specifications, workplace procedures, AS/NZS 2739, and safety and environmental requirements, and without causing damage to components or systems 3.2 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition and subtraction, to calculate service schedule intervals.
Oral communication	• Clarifies instructions.
Reading	• Interprets information from manufacturer and workshop literature when seeking service procedures and specifications relating to LNG fuel systems.
Problem solving	• Refers problems outside area of responsibility to required person.

Unit Mapping Information

Supersedes and is equivalent to AURTTL004 Inspect and service LNG fuel system.

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Assessment Requirements for AURTTL104 Inspect and service LNG fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service two different light vehicle, heavy commercial vehicle or forklift liquefied natural gas (LNG) fuel systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service LNG fuel systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service LNG fuel systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to inspecting and servicing LNG fuel systems, including procedures for:
  - working with a lighter-than-air flammable gas
  - avoiding cold burns
  - storing LNG

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- environmental requirements, including procedures for preventing loss of gas to atmosphere
- licensing requirements for working on LNG systems
- identification and function of LNG fuel system components
- basic operation of LNG fuel systems
- requirements of AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
- inspection procedures for LNG fuel systems, including:
  - leakage check
  - LNG container identity
  - container life
  - container recertification date
  - container corrosion and damage
  - container attachment
  - automatic fuel shut-off device
  - manual valves
  - compartment and sub-compartment refuelling connection
  - refuelling interlock device
  - flexible piping and hoses
  - ground clearances
  - vehicle identification, including identification markers
- service and adjustment procedures for LNG fuel systems, including checking compliance of fuel system emissions
- post-service testing procedures for LNG fuel systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle LNG fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
- manufacturer servicing schedules and vehicle LNG fuel system specifications
- vehicles and machinery specified in the performance evidence with operating LNG fuel systems requiring servicing

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- tools, equipment and materials appropriate for inspecting and servicing LNG fuel systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTL105 Diagnose and repair LNG fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the liquefied natural gas (LNG) fuel systems of vehicles or machinery. It involves preparing for the task, sourcing the diagnostic testing strategy, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The unit applies to LNG fuel systems in agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Mechanical Miscellaneous Technical – Alternative Fuels

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair LNG fuel system	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret diagnostic information 1.3 Analyse diagnostic options and source testing strategy, selecting those required for the circumstances 1.4 Identify hazards associated with the work and manage risks 1.5 Select and check diagnostic tools and equipment required for testing strategy for serviceability
2. Diagnose LNG fuel system	2.1 Perform diagnostic tests set out in testing strategy according to workplace procedures and safety and environmental

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ELEMENTS	PERFORMANCE CRITERIA
	requirements 2.2 Identify faults from diagnostic test results and determine causes of faults 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for required repairs or adjustments according to workplace procedures
3. Repair LNG fuel system	3.1 Source and interpret repair information 3.2 Analyse repair options and select those required for the circumstances 3.3 Select and check repair tools, equipment and materials 3.4 Carry out repairs and component replacements and adjustments according to manufacturer specifications, workplace procedures, safety and environmental requirements, and AS/NZ 2739 Natural gas (NG) fuel systems for vehicle engines, and without causing damage to components or system 3.5 Carry out post-repair testing according to workplace procedures and AS/NZ 2739 to confirm fault rectification, and rectify any further problems detected as having been introduced during the repair process
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Process workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Numeracy	• Measures LNG fuel system components and uses mathematical operations to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Interprets information from manufacturer and workshop literature when seeking LNG fuel system specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTL005 Diagnose and repair LNG fuel systems.

Links

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Assessment Requirements for AURTTL105 Diagnose and repair LNG fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in one of the following components in at least two vehicles with different liquefied natural gas (LNG) fuel systems:
  - mixers
  - regulators
  - fuel lock-off valves
  - electronic control valves or switches.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair LNG fuel systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair LNG fuel systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to diagnosing and repairing LNG fuel systems, including procedures for:
  - working with extremely cold and flammable gas
  - storing LNG
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- key requirements of AS/NZ 2739 Natural gas (NG) fuel systems for vehicle engines
- operating principles of LNG fuel systems and associated components
- application, purpose and operation of LNG fuel systems and components, including:
  - mixers
  - regulators
  - fuel lock-off valves
  - filters
  - tanks
  - control valves and switches
- diagnostic testing procedures for LNG fuel systems, including:
  - mixers
  - regulators
  - fuel lock-off valves
  - electronic control valves and switches
- repair procedures for LNG fuel systems, including procedures for removing, replacing and adjusting the systems
- post-repair testing procedures for LNG fuel systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the LNG fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer LNG fuel system specifications
- AS/NZ 2739 Natural gas (NG) fuel systems for vehicle engines
- two vehicles with different LNG fuel systems with faults
- diagnostic equipment for LNG fuel systems, including exhaust gas analyser
- tools, equipment and materials appropriate for repairing LNG fuel systems.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTL108 Diagnose and repair LPG fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the liquefied petroleum gas (LPG) fuel systems of vehicles or machinery. It involves preparing for the task, sourcing the diagnostic strategy, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The unit applies to LPG fuel systems in agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Mechanical Miscellaneous Technical – Alternative Fuels

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair LPG fuel system	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret diagnostic information 1.3 Analyse diagnostic options and source testing strategy, selecting those required for the circumstances 1.4 Identify hazards associated with the work and manage risks 1.5 Select and check diagnostic tools and equipment required for testing strategy for serviceability
2. Diagnose LPG fuel system	2.1 Perform diagnostic tests set out in testing strategy according to workplace procedures, and safety and environmental

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ELEMENTS	PERFORMANCE CRITERIA
	requirements 2.2 Identify faults from diagnostic test results and determine causes of faults 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for required repairs or adjustments according to workplace procedures
3. Repair LPG fuel system	3.1 Source and interpret repair information 3.2 Analyse repair options and select those required by the circumstances 3.3 Select and check repair tools, equipment and materials 3.4 Carry out repairs and component replacements and adjustments according to manufacturer specifications, workplace procedures, safety and environmental requirements, and AS/NZ 1425 LP Gas fuel systems for vehicle engines, and without causing damage to components or system 3.5 Carry out post-repair testing according to workplace procedures and AS/NZ 1425 to confirm fault rectification, and rectify any further problems detected as having been introduced during the repair process
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Numeracy	• Measures LPG fuel system components and uses mathematical operations to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Oral communication	• Clarifies instructions

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SKILL	DESCRIPTION
	• Obtains information from customers and supervisors.
Reading	• Interprets Australian Standards relating to repairing LPG fuel systems • Interprets information from manufacturer and workshop literature when seeking LPG fuel system specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTL008 Diagnose and repair LPG fuel systems.

Links

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Assessment Requirements for AURTTL108 Diagnose and repair LPG fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in at least two vehicles with different liquefied petroleum gas (LPG) fuel systems, in which the fault in each involves a different component from among the following:
  - mixers
  - regulators
  - fuel lock-off valves
  - electronic control valves or switches.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair LPG fuel systems, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair LPG fuel systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to diagnosing and repairing LPG fuel systems, including procedures for:
  - working with extremely cold and flammable gas
  - storing LPG
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- key requirements of AS/NZ 1425 LP Gas fuel systems for vehicle engines
- licensing requirements for working on LPG fuel systems
- application, purpose and operating principles of LPG fuel systems and associated components, including:
  - mixers
  - regulators
  - fuel lock-off valves
  - filters
  - tanks
  - control valves and switches
- diagnostic testing procedures for LPG fuel systems, including:
  - mixers
  - regulators
  - fuel lock-off valves
  - electronic control valves and switches
- repair procedures for LPG fuel systems, including removing, replacing and adjusting the systems
- post-repair testing procedures for LPG fuel systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the LPG fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer LPG fuel system specifications
- AS/NZ 1425 LP Gas fuel systems for vehicle engines
- two vehicles with different LPG fuel systems with faults
- diagnostic equipment for LPG fuel systems, including exhaust gas analyser

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- tools, equipment and materials appropriate for repairing LPG fuel systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTL111 Diagnose complex faults in CNG fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in compressed natural gas (CNG) fuel systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, choosing the diagnostic procedure and tools, applying the diagnostic procedure, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The CNG fuel systems include those in vehicles from all sectors of the industry.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Mechanical Miscellaneous Technical - Alternative Fuels

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Determine nature and objective of diagnosis requirements from workplace instructions 1.2 Confirm existence of fault in CNG fuel system from direct or indirect evidence 1.3 Identify hazards associated with the work and manage risks according to workplace procedures, and safety and environmental requirements

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ELEMENTS	PERFORMANCE CRITERIA
2. Prepare to diagnose complex faults	2.1 Access and interpret manufacturer specifications and other technical information for CNG fuel system 2.2 Identify diagnostic procedures and options 2.3 Select diagnostic method sequence, tests and testing processes from the range of identified options 2.4 Select and prepare testing equipment according to manufacturer specifications and workplace procedures 2.5 Identify, select and prepare tools, equipment and materials required to support the diagnostic process for use
3. Apply diagnostic procedures	3.1 Follow selected diagnostic process and carry out testing according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.2 Confirm diagnostic findings, as required, by using alternative or optional process according to manufacturer specifications and workplace procedures 3.3 Draw and document conclusions from findings according to workplace procedures and develop recommendations for required repairs that comply with AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines 3.4 Provide conclusions to required personnel or customer to confirm further action to be taken
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Applies diagnostic skills to different CNG fuel systems.
Numeracy	• Measures CNG fuel system components and uses basic mathematical operations, including addition and subtraction • Calculates deviations and tolerances from manufacturer specifications • Uses gauges and interpret units, such as kilopascals and

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SKILL	DESCRIPTION
	pounds per square inch (PSI).
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking CNG fuel system specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment • Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTL011 Diagnose complex faults in CNG fuel systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL111 Diagnose complex faults in CNG fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in at least three different compressed natural gas (CNG) systems
- the above diagnoses must involve at least two of the following types of complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in CNG fuel systems, including:
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose complex faults in CNG fuel systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to diagnosing complex faults in CNG fuel systems, including procedures for working with lighter-than-air flammable gas
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- types of complex faults relating to CNG fuel systems, including:
  - intermittent
  - multi-system
  - introduced as a result of system repair
  - indirect, caused by the influence of external systems
- types and key features of CNG fuel systems, including:
  - fuel lock-offs
  - injectors
  - mixers
  - metering units
- requirements of AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
- testing procedures for CNG fuel systems, including:
  - component failure analysis
  - safety component operation
  - electrical control systems
  - exhaust emissions
  - on-road fuel efficiency
  - data interpretation
- types and key features of diagnostic testing equipment required to diagnose complex faults in CNG fuel systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
  - vehicle continuous and non-continuous monitored systems
- methods and processes for documenting and reporting diagnostic findings and recommendations.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the CNG fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
- manufacturer CNG fuel system specifications
- three different CNG fuel systems with complex faults
- CNG fuel system diagnostic equipment, including scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in CNG fuel systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL112 Diagnose complex faults in LNG fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in liquefied natural gas (LNG) fuel systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, choosing the diagnostic procedure and tools, applying the diagnostic procedure, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those working in the automotive service and repair industry. The LNG fuel systems include those in vehicles from all sectors of the industry.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Mechanical Miscellaneous Technical - Alternative Fuels

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Determine nature and objective of diagnosis requirements from workplace instructions 1.2 Confirm existence of fault in LNG fuel system from direct or indirect evidence 1.3 Identify hazards associated with the work and manage risks according to workplace procedures, and safety and environmental requirements

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ELEMENTS	PERFORMANCE CRITERIA
2. Prepare to diagnose complex faults	2.1 Access and interpret manufacturer specifications and other technical information for LNG fuel system 2.2 Identify diagnostic procedures and options 2.3 Select diagnostic method sequence, tests and testing processes from the range of identified options 2.4 Select and prepare testing equipment according to manufacturer specifications and workplace procedures 2.5 Identify, select and prepare tools, equipment and materials required to support the diagnostic process for use
3. Apply diagnostic procedures	3.1 Follow selected diagnostic process and carry out testing according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.2 Confirm diagnostic findings, as required, by using alternative or optional process according to manufacturer specifications and workplace procedures 3.3 Draw and document conclusions from findings according to workplace procedures, and develop recommendations for required repairs that comply with AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines 3.4 Provide conclusions to required personnel or customer to confirm further action to be taken
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Applies diagnostic skills to different LNG fuel systems.
Numeracy	• Measures LNG fuel system components and uses basic mathematical operations, including addition and subtraction • Calculates deviations and tolerances from manufacturer specifications • Uses gauges and interprets units, such as kilopascals and

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SKILL	DESCRIPTION
	pounds per square inch (PSI).
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Organises and interprets technical information from manufacturer and workshop literature when seeking LNG fuel system specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment • Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTL012 Diagnose complex faults in LNG fuel systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL112 Diagnose complex faults in LNG fuel systems

Modification History

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Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in at least three different liquefied natural gas (LNG) systems
- the above diagnoses must involve at least two of the following types of complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in LNG fuel systems, including:
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose complex faults in LNG fuel systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to diagnosing complex faults in LNG fuel systems, including procedures for working with lighter-than-air flammable gas
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- types of complex faults relating to LNG fuel systems, including:
  - intermittent
  - multi-system
  - introduced as a result of system repair
  - indirect, caused by the influence of external systems
- types and key features of LNG fuel systems, including:
  - fuel lock-offs
  - injectors
  - mixers
  - metering units
- requirements of AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
- testing procedures for LNG fuel systems, including:
  - component failure analysis
  - safety component operation
  - electrical control systems
  - exhaust emissions
  - on-road fuel efficiency
  - data interpretation
- types and key features of diagnostic testing equipment required to diagnose complex faults in LNG fuel systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
  - vehicle continuous and non-continuous monitored systems
- methods and processes for documenting and reporting diagnostic findings and recommendations.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the LNG fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
- manufacturer LNG fuel system specifications
- three different LNG fuel systems with complex faults
- LNG fuel system diagnostic equipment, including:
  - scan tools
  - compression gauges
  - vacuum gauges
- tools, equipment and materials appropriate for diagnosing complex faults in LNG fuel systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL113 Diagnose complex faults in LPG fuel systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in liquefied petroleum gas (LPG) fuel systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, choosing the diagnostic procedure and tools, applying the diagnostic procedure, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

This unit applies to those working in the automotive service and repair industry. The LPG fuel systems include those in vehicles from all sectors of the industry.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Mechanical Miscellaneous Technical - Alternative Fuels

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Determine nature and objective of diagnosis requirements from workplace instructions 1.2 Confirm existence of fault in LPG fuel system from direct or indirect evidence 1.3 Identify hazards associated with the work and manage risks according to workplace procedures, and safety and environmental requirements

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ELEMENTS	PERFORMANCE CRITERIA
2. Prepare to diagnose complex faults	2.1 Access and interpret manufacturer specifications and other technical information for LPG fuel system 2.2 Identify diagnostic procedures and options 2.3 Select diagnostic method sequence, tests and testing processes from the range of available options 2.4 Select and prepare testing equipment according to manufacturer specifications and workplace procedures 2.5 Identify, select and prepare tools, equipment and materials required to support the diagnostic process for use
3. Apply diagnostic procedures	3.1 Follow selected diagnostic process and carry out testing according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.2 Confirm diagnostic findings, as required, by using alternative or optional process according to manufacturer specifications and workplace procedures 3.3 Draw and document conclusions from findings according to workplace procedures, and develop recommendations for required repairs that comply with AS/NZS 1425 LP Gas fuel systems for vehicle engines 3.4 Provide conclusions to required personnel or customer to confirm further action to be taken
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Applies diagnostic skills to different LPG fuel systems.
Numeracy	• Measures LPG fuel system components and uses basic mathematical operations, including addition and subtraction • Calculates deviations and tolerances from manufacturer specifications • Uses gauges and interprets units, such as kilopascals and

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SKILL	DESCRIPTION
	pounds per square inch (PSI).
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Reading	• Organises and interprets technical information from manufacturer and workshop literature when seeking LPG fuel system specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment • Uses specialised diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTL013 Diagnose complex faults in LPG fuel systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL113 Diagnose complex faults in LPG fuel systems

Modification History

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Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in at least three different liquefied petroleum gas (LPG) fuel systems
- the above diagnoses must involve at least two of the following types of complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose complex faults in LPG fuel systems, including:
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose complex faults in LPG fuel systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to diagnosing complex faults in LPG fuel systems, including procedures for working with heavier-than-air flammable gas
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- types of complex faults relating to LPG fuel systems, including:
  - intermittent
  - multi-system
  - introduced as a result of system repair
  - indirect, caused by the influence of external systems
- types and key features of LPG fuel systems, including:
  - converter-mixer systems
  - injection systems
- requirements of AS/NZS 1425 LP Gas fuel systems for vehicle engines
- testing procedures for LPG fuel systems, including:
  - component failure analysis
  - safety component operation
  - electrical control systems
  - exhaust emissions
  - on-road fuel efficiency
  - data interpretation
- types and key features of diagnostic testing equipment required to diagnose complex faults in LPG fuel systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
  - vehicle continuous and non-continuous monitored systems
- methods and processes for documenting and reporting diagnostic findings and recommendations.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the LPG fuel systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- AS/NZS 1425 LP Gas fuel systems for vehicle engines
- manufacturer LPG fuel system specifications
- three different LPG fuel systems with complex faults
- LPG fuel system diagnostic equipment, including:
  - scan tool
  - vacuum gauge
  - compression gauge
- tools, equipment and materials appropriate for diagnosing complex faults in LPG fuel systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTQ103 Inspect and service drive shafts

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service vehicle drive shafts. It involves preparing for the task, inspecting the drive shaft for damage or abnormal wear, reporting the inspection findings, servicing and adjusting the drive shaft, and completing workplace processes and documentation.

This unit applies to those working in the automotive service and repair industry. The drive shafts include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery, motorcycles or outdoor power equipment. The servicing operations undertaken may vary based on the occupation of the learner.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical - Driveline and Final Drives

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service drive shaft	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret servicing information 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for servicing activity and establish serviceability according to workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
2. Inspect drive shaft	2.1 Carry out inspection according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 2.2 Compare inspection results with manufacturer specifications 2.3 Report inspection findings for necessary repairs according to workplace procedures
3. Service drive shaft	3.1 Carry out service and adjustments according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 3.2 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Carry out final inspection to ensure work meets workplace expectations and confirm vehicle or machinery is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Locates information from manufacturer and workshop literature when seeking service procedures and specifications relating to drive shafts.
Oral communication	• Clarifies instructions.
Numeracy	• Measures components and use basic mathematical operations, including addition and subtraction • Calculates deviations and tolerances from manufacturer specifications.
Problem solving	• Refers to problems outside area of responsibility to appropriate person.

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Unit Mapping Information

Supersedes and is equivalent to AURTTQ003 Inspect and service drive shafts.

Links

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Assessment Requirements for AURTTQ103 Inspect and service drive shafts

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service the drive shafts of at least two different vehicles or machinery.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service drive shafts, including:
  - vehicle manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service drive shafts, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to inspecting and servicing drive shafts, including procedures for:
  - working with rotating shafts
  - handling lubricants
- environmental requirements relating to inspecting and servicing drive shafts
- identification of drive shaft components, including:
  - single and multi-piece shafts

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  - universal joints
  - rubber type couplings
  - slip joints
  - support bearings
  - constant velocity joints
- types and applications of drive shaft lubricants
- inspection procedures for drive shafts, including:
  - component wear or damage
  - lubricant leaks
- service and adjustment procedures for drive shafts, including lubricating components as required
- post-service testing procedures of drive shafts.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the drive shafts that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer drive shaft specifications
- two different vehicles or machinery with drive shafts requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing drive shafts.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTR101 Diagnose complex faults in engine management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose complex faults in engine management systems and identifying the repair action necessary to restore system performance. The systems used vary based on the work context. It involves confirming the existence of a fault, developing a diagnostic testing strategy, diagnosing the cause of the fault, reporting conclusions and making repair recommendations. Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

The unit applies to those who work in the automotive service and repair industry. The engine management systems include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical – Electrical and Electronics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm the work requirement	1.1 Identify job requirements from workplace instructions 1.2 Confirm nature of fault according to workplace procedures 1.3 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures
2. Prepare to diagnose complex faults	2.1 Identify required information for diagnosis activity 2.2 Analyse diagnostic options and develop testing strategy, including, diagnostic method sequence, tests and testing processes 2.3 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
3. Apply diagnostic procedures	3.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 3.2 Verify and report diagnostic findings using reliable alternative process according to manufacturer specifications and workplace procedures 3.3 Develop and report recommendations for necessary repairs according to workplace procedures 3.4 Communicate findings to workplace supervisor and customer and confirm next steps
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for repair process or return to customer 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures.

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops own approach to a task, including steps to confirm findings • Applies diagnostic skills to different vehicles or machinery
Reading	• Identifies, organises and interprets technical information from manufacturer and workshop literature when seeking

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SKILL	DESCRIPTION
	engine management system specifications and procedures
Oral communication	• Clarifies instructions • Gains information from customers and supervisors
Numeracy	• Measures engine management system components and uses mathematical operations, to calculate tolerances and deviations from manufacturer specifications • Uses electrical measuring equipment and interpret units, such as amperes, ohms, and volts
Planning and organising	• Plans own work requirements • Prioritises and sequences actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses measuring equipment • Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURTTR001 Diagnose complex faults in engine management systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTR101 Diagnose complex faults in engine management systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose a complex fault in three different engine management systems in which the work for at least two of the systems must involve a different complex fault from the following:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems
- develop a testing strategy to diagnose the causes of the complex faults in the above systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair complex faults in engine management systems, including:
  - engine management system manufacturer specifications
  - information from customers and supervisors
- workplace procedures required to diagnose and repair complex faults in engine management systems, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - safe disposal of materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing complex faults in engine management systems, including procedures for:
    - working with high pressure petrol fuel systems
    - working on vehicle high voltage ignition systems
    - identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
- environmental requirements relating to engine management systems
- types of complex faults relating to engine management systems, including:
    - intermittent
    - multi-system
    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- key features of engine management systems, including:
    - injectors
    - air flow meters
    - temperature sensors
    - pressure sensors
    - throttle position sensors
- testing procedures for engine management systems, including procedures for:
    - dynamic and static testing of vehicle or machinery
    - component failure analysis
- types and key features of diagnostic testing equipment required to diagnose complex faults in engine management systems, including:
    - scan tools
    - oscilloscopes
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - freeze frame data
    - waveforms.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine management systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine management system specifications
- three different vehicles or machinery with complex faults in their engine management systems
- engine management system diagnostic equipment, including scan tools and oscilloscopes
- tools, equipment and materials appropriate for diagnosing complex faults in engine management systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTS101 Fabricate exhaust systems and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to fabricate and test exhaust systems and their components. It involves preparing for the task, selecting procedures for fabrication, performing post-fabrication testing, and completing processes and documentation.

This unit applies to those working in the automotive service and repair industry. The exhaust systems and components that are fabricated are for internal combustion engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical – Fabrication

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to fabricate exhaust system component	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret fabrication information 1.3 Analyse and select suitable fabrication options 1.4 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools and equipment required for the job and establish serviceability according to workplace procedures
2. Fabricate and test component	2.1 Identify and obtain component material according to job requirements 2.2 Shape, machine and weld material according to manufacturer

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ELEMENTS	PERFORMANCE CRITERIA
	specifications and workplace procedures 2.3 Measure component to ensure compliance with manufacturer specifications 2.4 Carry out component fabrication according to manufacturer specifications, workplace procedures, and workplace health and safety requirements 2.5 Test component according to workplace procedures and job requirements and rectify any issues identified
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Reads and interprets complex information and ideas from workplace procedures, documentation, legislation and regulations for safely operating fabrication equipment.
Oral communication	• Clarifies instructions.
Numeracy	• Understands welding gas pressures and welding wire feed rates • Uses basic mathematical operations, including addition and subtraction, to calculate distances and material requirements.
Planning and organising	• Prepares work area and tools • Designs exhaust system components to fit within vehicle and other system constraints.
Technology	• Uses specialised equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURTTS001 Fabricate exhaust systems and components.

Links

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Assessment Requirements for AURTTS101 Fabricate exhaust systems and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- fabricate at least two different exhaust systems
- complete the following activities in the course of the above work:
  - manufacture flanges
  - undertake pipe bending
  - join components by welding.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to fabricate exhaust systems and components, including:
  - manufacturers specifications or equivalent documentation
- workplace procedures required to fabricate exhaust systems and components, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- the following workplace health and safety (WHS) requirements relating to fabricating exhaust systems and components:
  - selecting and using personal protective equipment (PPE)

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    - procedures for using tools and equipment
    - procedures for safely handling fabrication equipment
    - procedures for controlling abnormal noise and hazardous fumes
- environmental requirements for fabricating exhaust systems and components
- technical exhaust systems information, including:
    - scavenging
    - back pressure
- purpose and operation of the following exhaust systems:
    - mufflers
    - extractor pipes
    - catalytic converters
    - diesel particulate filters
- purpose and operation of the following exhaust component fabrications:
    - pipe bending
    - flange manufacture
    - welding techniques
- purpose and operation of the following exhaust fabrication tools:
    - exhaust pipe benders
    - pipe cutters
    - formers
    - welding equipment.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the exhaust systems that they have fabricated, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- exhaust system fabrication material, including:
    - exhaust pipe
    - exhaust flanges
    - exhaust brackets
- tools, equipment and materials appropriate for exhaust system fabrication, including:
    - exhaust pipe benders

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- pipe cutters
- formers
- welding equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURTTX102 Inspect and service manual transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service manual transmissions. It involves preparing for the task, inspecting the transmission, reporting the inspection findings, servicing and adjusting the transmission, and completing workplace processes and documentation.

This unit applies to those working in the automotive service and repair industry. The manual transmissions include those of agricultural machinery, heavy commercial vehicles, light vehicles, motorcycles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical - Transmission

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service manual transmission	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret servicing information 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools, equipment and materials for serviceability
2. Inspect manual transmission	2.1 Carry out inspection according to manufacturer specifications, workplace procedures, and safety and environmental requirements 2.2 Compare inspection results with manufacturer specifications

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Report recommendations for required repairs or adjustments according to workplace procedures
3. Service manual transmission	3.1 Carry out service and adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets information from manufacturer and workshop literature when seeking service procedures and specifications relating to manual transmissions.
Oral communication	• Clarifies instructions.
Numeracy	• Calculates liquid volumes and service schedule intervals using basic mathematical operations, including addition and subtraction.

Unit Mapping Information

Supersedes and is equivalent to AURTTX002 Inspect and service manual transmissions.

Links

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Assessment Requirements for AURTTX102 Inspect and service manual transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service the manual transmissions of at least two different vehicles or machinery.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service manual transmissions, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service manual transmissions, including:
  - establishing serviceability of tools and equipment
  - documentation procedures, including:
    - inspection findings and recommendations for required repairs or adjustments
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to inspecting and servicing manual transmissions, including procedures for handling transmission oils
- environmental requirements, including procedures for trapping, storing and disposing of oils released from transmissions
- identification and function of manual transmissions, including:

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  - major components
  - gearshift mechanisms
- basic operation of manual transmissions, including:
  - transaxle
  - longitudinal transmission
  - transfer case
- types and applications of transmission oils
- inspection procedures for manual transmissions, including:
  - evaluating lubricant condition
  - carrying out visual inspections for damage or lubricant leaks
- service and adjustment procedures for manual transmissions, including:
  - replacing oils as required
  - inspecting and adjusting lubricant levels
  - adjusting linkages as required
- post-service testing procedures for manual transmissions.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the manual transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer manual transmission specifications
- two different vehicles or machinery with manual transmissions requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing manual transmissions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTX103 Inspect and service automatic transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service automatic transmissions. It involves preparing for the task, inspecting the transmission, reporting the inspection findings, servicing and adjusting the transmission, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The automatic transmissions include those of agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical - Transmission

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service automatic transmission	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret servicing information 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools, equipment and materials for serviceability
2. Inspect automatic transmission	2.1 Carry out inspection according to manufacturer specifications, workplace procedures, and safety and environmental requirements 2.2 Compare inspection results with manufacturer specifications

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Report recommendations for required repairs or adjustments according to workplace procedures
3. Service automatic transmission	3.1 Carry out service and adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Calculates liquid volumes and service schedule intervals using basic mathematical operations, including addition and subtraction.
Oral communication	• Clarifies instructions.
Reading	• Interprets information from manufacturer and workshop literature when seeking service procedures and specifications relating to automatic transmissions.
Technology	• Uses specialised tools and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTX003 Inspect and service automatic transmissions.

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Links

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Assessment Requirements for AURTTX103 Inspect and service automatic transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service the automatic transmissions of at least two different vehicles or machinery, including:
  - replacing transmission fluid and filter
  - making transmission adjustments.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service automatic transmissions, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service automatic transmissions, including:
  - establishing serviceability of tools and equipment
  - documentation procedures, including:
    - inspection findings and recommendations for required repairs or adjustments
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to inspecting and servicing automatic transmissions, including procedures for handling transmission fluids

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- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmissions
- identification and function of automatic transmission components, including:
  - torque converter
  - control valve body
  - housings
  - gear trains
  - bands and clutch packs
  - servos
  - oil pumps
  - electronic controls
  - selector mechanisms
- basic operation of automatic transmission, including:
  - torque converter
  - transaxle
  - longitudinal transmission
- types and applications of transmission fluids
- inspection procedures for automatic transmissions, including:
  - fluid levels and condition
  - fluid leaks
  - internal and external physical condition
  - transmission sensors and controls
- service and adjustment procedures for automatic transmissions, including:
  - replacing transmission fluid and filter
  - checking transmission fluid levels
  - adjusting bands, linkages and sensors as required
- post-service testing procedures for automatic transmissions.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the automatic transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- workplace instructions
- manufacturer automatic transmission specifications
- two different vehicles or machinery with automatic transmissions requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing automatic transmissions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTX104 Inspect and service hydrostatic transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect and service hydrostatic transmissions and associated components. It involves preparing for the task, inspecting the transmission and components, reporting the inspection findings, servicing and adjusting the transmission, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The hydrostatic transmissions include those of agricultural machinery, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical - Transmission

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect and service hydrostatic transmission	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret servicing information 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools, equipment and materials for serviceability
2. Inspect hydrostatic transmission	2.1 Carry out inspection according to manufacturer specifications, workplace procedures, and safety and environmental requirements 2.2 Compare inspection results with manufacturer specifications

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Report recommendations for required repairs or adjustments according to workplace procedures
3. Service hydrostatic transmission	3.1 Carry out service and adjustments according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Carry out post-service testing according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses mathematical operations, including addition and subtraction, to determine liquid quantities • Interprets pressure gauges and units of pressure.
Oral communication	• Clarifies instructions.
Reading	• Interprets information from manufacturer and workshop literature when seeking service procedures and specifications relating to hydrostatic transmissions.
Problem solving	• Refers problems outside area of responsibility to required person.

Unit Mapping Information

Supersedes and is equivalent to AURTTX004 Inspect and service hydrostatic transmissions.

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Assessment Requirements for AURTTX104 Inspect and service hydrostatic transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect and service the hydrostatic transmissions of at least two different pieces of machinery.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect and service hydrostatic transmissions, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect and service hydrostatic transmissions including:
  - establishing serviceability of tools and equipment
  - documentation procedures, including:
    - inspection findings and recommendations for required repair or adjustment
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to inspecting and servicing hydrostatic transmissions, including procedures for:
  - working with high oil pressures
  - working with stored hydraulic accumulator pressures

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    - isolating and stabilising machinery
- environmental requirements, including procedures for trapping, storing and disposing of oil released from hydrostatic transmissions
- identification, function and basic operation of hydrostatic transmission and components, including:
    - charge pump
    - main pump
    - drive motor
    - filters
    - hydraulic lines
    - heat exchanger
    - reservoir
    - control valve
- types and applications of hydraulic oil
- inspection procedures for hydrostatic transmissions, including:
    - hydraulic oil sampling
    - oil leaks
    - pressure checks as required
- service and adjustment procedures for hydrostatic transmissions, including
    - adjusting or replenishing oil level as required
    - replacing filters as required
- post-service testing procedures for hydrostatic transmissions.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the hydrostatic transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer hydrostatic transmission specifications
- two different machinery with hydrostatic transmissions requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing hydrostatic transmissions.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTX106 Diagnose and repair hydrostatic transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in hydrostatic transmissions and their associated components. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The hydrostatic transmissions include those in agricultural machinery, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical – Transmissions

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair heavy vehicle hydrostatic transmission	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENT	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose heavy vehicle hydrostatic transmission	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Develop and report recommendations for necessary repairs according to workplace procedures
3. Repair heavy vehicle hydrostatic transmission	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures hydrostatic transmission components • Uses mathematical operations • Calculates distances, areas and tolerances • Calculates deviations from manufacturer specifications
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURTTX006 Diagnose and repair hydrostatic transmissions.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX106 Diagnose and repair hydrostatic transmissions

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the hydrostatic transmission systems of two different vehicles or machinery, including in three of the following components:
  - charge pump
  - main pump
  - drive motor
  - hydraulic lines
  - heat exchanger
  - control valve.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair hydrostatic transmissions, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair hydrostatic transmissions, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to diagnosing and repairing hydrostatic transmissions, including procedures for:
    - working with high pressure and stored energy hazards
    - isolating and stabilising machines
- environmental requirements relating to diagnosing and repairing hydrostatic transmissions, including procedures for trapping, storing and disposing of fluids released from hydrostatic transmissions
- operating principles of hydrostatic transmissions and associated components, including:
    - closed loop
    - charge circuitry
    - flushing circuit
- purpose and operation of hydrostatic transmissions and components, including:
    - charge pump
    - main pump, including pilot control systems
    - drive motor, including control systems
    - filtering
    - hydraulic lines
    - heat exchanger
    - reservoir
- diagnostic testing procedures for hydrostatic transmissions, including:
    - testing charging system
    - testing closed loop system
    - testing flushing system
    - measuring case drains
    - testing internal and external fluid leaks
    - checking abnormal noises and operation
    - using scan tools and multimeter
- repair procedures for hydrostatic transmissions, including procedures for:
    - isolating faults
    - dismantling components and parts
    - inspecting and evaluating worn components
    - repairing and replacing parts
- post-repair flow and pressure testing procedures for hydrostatic transmissions.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the hydrostatic transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for hydrostatic transmissions
- two different vehicles or machinery with faults in the hydrostatic transmission components specified in the performance evidence
- diagnostic equipment for hydrostatic transmissions
- tools, equipment and materials appropriate for repairing and adjusting hydrostatic transmissions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURTTZ102 Diagnose and repair exhaust systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the exhaust systems of vehicles. The systems used vary based on the work context. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The exhaust systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Mechanical Miscellaneous Technical – Emission and Exhaust

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to diagnose and repair exhaust system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Select diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies

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ELEMENTS	PERFORMANCE CRITERIA
	and procedures 1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose exhaust system	2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements 2.2 Identify cause of fault through analysis of diagnostic test results 2.3 Confirm and report cause of fault according to workplace procedures 2.4 Identify and report recommendations for necessary repairs according to workplace procedures
3. Repair exhaust system	3.1 Identify required information for repair activity 3.2 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures 3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and

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SKILL	DESCRIPTION
	manufacturer specifications.
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures exhaust system components • Uses mathematical operations • Calculates distances, areas, volumes and tolerances • Calculates deviations from manufacturer specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses diagnostic equipment.

Unit Mapping Information

Supersedes and is equivalent to AURTTZ002 Diagnose and repair exhaust systems.

Links

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Assessment Requirements for AURTTZ102 Diagnose and repair exhaust systems

Modification History

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Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in two different vehicles, in which the fault for each must involve a different exhaust system component from among the following:
  - exhaust manifold or extractor pipes
  - manifold gasket fitted to a vehicle
  - catalytic converter
  - muffler or resonator
  - exhaust pipe.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair exhaust systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair exhaust systems, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to diagnosing and repairing exhaust systems, including procedures for working with hot components and exhaust systems producing toxic gases
- environmental requirements relating to diagnosing and repairing exhaust systems
- operating principles of exhaust systems, including:
  - scavenging
  - back pressure
- purpose and operation of exhaust systems and components, including:
  - mufflers
  - extractor pipes
  - catalytic converters
  - diesel particulate filters
- diagnostic testing procedures for exhaust systems, including procedures for:
  - exhaust leak testing
  - vibration and noise locating procedures
  - back pressure testing
- repair procedures for exhaust systems, including procedures for removing, replacing and aligning components
- post-repair testing procedures for exhaust systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the emission control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer emission control system specifications
- two different vehicles or machinery with exhaust systems requiring servicing
- equipment, tools and materials appropriate for inspecting and servicing exhaust systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVNA107 Apply automotive mechanical and electrical knowledge to vehicle loss assessments

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to identify mechanical and electrical damage resulting from a vehicle accident.

The unit applies to those applying specialist automotive knowledge to a vehicle loss assessment in the loss assessment environment. Loss assessment may relate to light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Vehicle Body Loss Assessment and Repair Quoting

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop and apply an understanding of automotive mechanical knowledge	1.1 Employ research techniques, including discussions with customers and supervisors, and advanced specialist knowledge to identify vehicle mechanical damage 1.2 Develop knowledge of the operating principles of suspension and steering systems, brake systems, transmission and driveline assembly, and engine and fuel systems 1.3 Apply knowledge of suspension and steering systems, brake systems, transmission and driveline assembly, and engine and fuel systems to loss assessment processes, procedures and

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ELEMENTS	PERFORMANCE CRITERIA
	policies
2. Develop and apply an understanding of automotive electrical knowledge	2.1 Develop knowledge of the operating principles of electrical and electronic systems 2.2 Apply knowledge of electrical and electronic systems to loss assessment processes, procedures and policies 2.3 Identify electrical damage
3. Develop and apply an understanding of advanced specialist vehicle knowledge	3.1 Develop knowledge of specific vehicle types, clarify where required, and apply to loss assessment processes, procedures and policies 3.2 Develop knowledge of latest technology relating to automotive mechanical and electrical systems, clarify where required, and apply to loss assessment processes, procedures and policies

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets technical measurements.
Oral communication	• Engages with repairers and specialist providers.
Reading	• Applies loss assessment processes, procedures and policies • Identifies, interprets and applies automotive mechanical, electrical and advanced specialist vehicle knowledge.

Problem solving	• Clarifies problems relating to:
	  • brake systems
	  • engine and fuel systems
	  • electrical and electronic systems
	  • latest automotive technology
	  • specific vehicle types
	  • suspension and steering systems
	  • transmission and driveline assembly
	• Clarifies knowledge of specific vehicle types and latest technology relating to automotive mechanical and electrical problems.

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Unit Mapping Information

Supersedes and is equivalent to AURVNA007 Apply automotive mechanical and electrical knowledge to vehicle loss assessments.

Links

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Assessment Requirements for AURVNA107 Apply automotive mechanical and electrical knowledge to vehicle loss assessments

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- undertake each of the following on at least one occasion:
  - apply automotive mechanical and electrical knowledge to vehicle loss assessment processes, procedures and policies
  - apply latest automotive technology knowledge and knowledge of specific vehicle types to vehicle loss assessment processes, procedures and policies
  - identify vehicle mechanical and electrical damage.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to apply automotive mechanical and electrical knowledge to vehicle loss assessments, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - workshop manuals
  - subject matter experts
- workplace procedures required to apply automotive mechanical and electrical knowledge to vehicle loss assessments, including:
  - documentation, recording and reporting procedures
  - use of digital images
- motor vehicle mechanical systems and components, including:
  - damage and faults
  - dismantling and repair methods
- motor vehicle operating principles of electrical and electronic systems and components, including:

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  - damage and faults
  - dismantling and repair methods
  - batteries and charging systems
  - electrical circuits
  - electronic body and drive management systems
  - electronic spark ignition engine management system
  - ignition systems
  - starting systems
  - lights and vehicle sensors
- motor vehicle operating principles of mechanical systems and components, including:
  - brake systems, including:
    - air braking system
    - anti-lock braking system (ABS)
    - autonomous braking system
    - hydraulic braking system
    - stability control
  - engine and fuel systems, including:
    - cooling system
    - emission control system
    - engine components
    - fuel system
  - suspension and steering systems, including:
    - dependant suspension
    - independent wishbone suspension
    - double wishbone suspension
    - McPherson strut suspension
  - transmission and driveline assembly, including:
    - automatic and manual transmission
    - clutch assembly
    - driveline
    - final drive assembly
- technical knowledge relating to a specific vehicle type, including light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles
- technical knowledge of latest technology relating to mechanical, electrical and electronic motor vehicle repair, including repair of battery electric vehicles (BEV) and hybrid vehicles
- vehicle inspection and damage assessment procedures and methodologies, including repair set-ups and dismantling procedures
- current assessing and quoting methodologies
- relevant automotive websites to locate current best practice and future trends

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- applicable commonwealth, state or territory laws, regulations and standards relating to vehicle loss assessment and reporting requirements, including:
  - environmental regulations
  - intellectual property
  - legislation
  - applicable Workplace Health and Safety Act.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third party evidence, individuals must provide evidence that links them to the vehicles that they have assessed, e.g. assessment reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- a range of vehicles with mechanical and electrical damage
- relevant information including OEM or authorised agencies repair procedures, component supplier specifications and repair guides
- relevant materials and resources.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVNN101 Evaluate vehicle bodywork for damage and identify repair requirements

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to evaluate the bodywork of a vehicle for damage and to identify the materials, equipment and processes required to repair it. This unit involves using vehicle paint, body and mechanical technical knowledge and locating, evaluating and documenting relevant information when selecting materials, equipment and processes.

The unit applies to those who evaluate the bodywork of a vehicle for damage and select materials, equipment and processes to repair the vehicle in a vehicle repair or vehicle loss assessment environment. Vehicles may include light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Vehicle Body Loss Assessment and Repair Quoting - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Use work instructions to determine job requirements 1.2 Read, interpret and comply with workplace policies, safety requirements, procedures, legal requirements, and component supplier specifications 1.3 Select and check safety equipment, tooling equipment, and materials and equipment

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ELEMENTS	PERFORMANCE CRITERIA
2. Assess vehicle bodywork for damage	2.1 Locate vehicle to be inspected 2.2 Dismantle and inspect vehicle system and components to determine vehicle damage and faults 2.3 Inspect vehicle in line with workplace policies and procedures, legal requirements, vehicle manufacturer and component supplier specifications, safety requirements and workplace environmental practices 2.4 Determine suitability of vehicle for insurance according to workplace policies and procedures
3. Gather vehicle data and specifications	3.1 Identify and document bodywork process specifications 3.2 Consult staff and management to identify additional or altered specifications 3.3 Evaluate existing materials and equipment 3.4 Compile and document vehicle data and specifications
4. Evaluate and select materials, equipment and processes	4.1 Determine materials and equipment options 4.2 Assess materials and equipment for quality finish and conformity to standards 4.3 Compare specifications of materials and equipment for performance and cost 4.4 Determine commercial, environmental and safety impact of materials and equipment selection 4.5 Select materials, equipment and processes based on performance, cost, specifications and impact comparison 4.6 Document evaluation process as required by organisational policies and procedures, and legal requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Teamwork	• Works effectively and cooperatively with others in identifying specifications that contribute to evaluation of vehicle repair requirements.
Planning and organising	• Organises activities • Identifies and evaluates options systematically.

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SKILL	DESCRIPTION
Problem solving	• Identifies potential technical and procedural problems and variables.

Unit Mapping Information

Supersedes and is equivalent to AURVNN001 Evaluate vehicle bodywork for damage and identify repair requirements.

Links

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Assessment Requirements for AURVNN101 Evaluate vehicle bodywork for damage and identify repair requirements

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- evaluate the damage on bodywork of at least of two vehicles and identify repair requirements, with at least one evaluation relating to minor damage and the other relating to extensive damage
- for each evaluation:
  - determine the impact of decisions in terms of commercial and safety risks
  - document bodywork materials, equipment and processes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to evaluate vehicle bodywork for damage and suggest repair materials, equipment and processes, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - recognised agency information, component supplier specifications, workshop manuals and repair guides
- workplace procedures required to evaluate vehicle bodywork for damage and suggest repair materials, equipment and processes, including:
  - documentation, recording and reporting procedures
  - use of digital images
- motor vehicle mechanical, electrical, paint, panel and structural:
  - extensive damage, which is damage that affects the safety and roadworthiness of a vehicle and includes:
    - body panel damage
    - bolt-on vehicle component damage

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    - mechanical component damage
    - structural component damage
    - structural damage
    - welded or bonded key structural components, such as chassis rails damage
  - faults
  - dismantling and repair methods
  - minor damage, which is damage that does not affect the safety and roadworthiness of a vehicle and includes:
    - bumper bar graze
    - hail damage
    - panel damage
- methods for sourcing current retail costs of vehicles and vehicle components and materials
- vehicle inspection and damage assessment procedures and methodologies, including repair set-up and dismantling procedures
- current assessing and quoting methodologies
- vehicle testing machines and procedures
- relevant automotive websites to locate information on current best practice and future trends in the vehicle loss assessment environment
- general insurance industry knowledge, including relevant sections of:
  - contract and insurance law
  - Insurance Contracts Act
  - intellectual property
  - Motor Vehicle Insurance and Repair Industry Code of Conduct
  - state or territory Fair Trading Act
- types of component supplier specifications available, including:
  - vehicle design specifications and drawings
  - repair instructions and procedures
  - component replacement instructions and procedures
- applicable commonwealth, state or territory laws, regulations and standards relating to evaluating vehicle damage, and suggesting repair materials, equipment and processes, including:
  - commercial-in-confidence practices
  - environmental regulations
  - intellectual property
  - personal legal liability
  - applicable Workplace Health and Safety Act
  - safety requirements in accordance with applicable commonwealth, state or territory Workplace Health and Safety Act, including:
  - ensuring safe location of vehicle to be inspected
  - following workplace safety procedures
  - identifying potential safety hazards

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- materials and equipment for evaluating vehicle damage, including:
  - digital camera
  - electronic or paper-based information and reports
  - maps
  - elcometer
  - hoist
  - personal computer, laptop or tablet, and internet connection
  - personal protective equipment (PPE) kit and protective covers
  - portable light
- workplace policies and procedures relating to evaluating vehicle damage, and suggesting repair materials, equipment and processes, including:
  - quality policies and procedures according to Australian standards
  - industry codes of practice.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have assessed, e.g. assessment reports

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- a range of vehicles with both minor and extensive vehicle damage
- computer hardware, software and calculators
- internet access
- necessary tools and equipment
- relevant information, including OEM or recognised agency information and repair procedures, workshop and body repair manuals
- workplace technology.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVNP101 Evaluate vehicle paintwork for damage and identify refinish requirements

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to evaluate vehicle paintwork for damage and identify the paint refinish required to repair a vehicle. This unit involves using technical understanding of paint applications and procedures and locating, evaluating and documenting relevant information.

The unit applies to those who evaluate the paintwork on a vehicle for damage and identify appropriate paint refinish to repair the vehicle in a vehicle repair or vehicle loss assessment environment. Vehicles may include light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Vehicle Body Loss Assessment and Repair Quoting - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Use work instructions to determine job requirements 1.2 Read and comply with workplace safety requirements and workplace environmental practices and policies 1.3 Read, interpret and comply with workplace policies, safety requirements, procedures, legal requirements, and component supplier specifications 1.4 Select and check safety equipment, tools, materials and other

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ELEMENTS	PERFORMANCE CRITERIA
	equipment
2. Assess vehicle paintwork for damage	2.1 Locate vehicle to be inspected 2.2 Inspect paintwork to identify vehicle paintwork damage and potential paint problems 2.3 Inspect vehicle in line with workplace policies and procedures, legal requirements, specification of vehicle manufacturer or component suppliers, safety requirements and workplace environmental practices
3. Gather vehicle data and specifications	3.1 Identify and document painting specifications 3.2 Consult staff and management to identify additional or altered specifications 3.3 Evaluate existing paint refinish materials and equipment 3.4 Compile and document vehicle data and specifications
4. Evaluate and select materials, equipment and processes	4.1 Determine materials and equipment options 4.2 Assess materials and equipment for quality finish and conformity to standards 4.3 Compare specifications of materials and equipment for performance and cost 4.4 Determine commercial, environmental and safety impact of materials and equipment selected 4.5 Select materials, equipment and processes based on performance, cost, specifications and impact comparison 4.6 Complete evaluation report detailing required specifications and repair process according to workplace policies and procedures, and legal requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Clarifies instructions.
Teamwork	• Works effectively and cooperatively with others in identifying specifications that contribute to evaluation of paintwork repair requirements.

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SKILL	DESCRIPTION
Planning and organising	• Organises activities • Identifies and evaluates options systematically.
Problem solving	• Identifies and resolves potential technical and procedural problems and variables within scope of own responsibility.

Unit Mapping Information

Supersedes and is equivalent to AURVNP001 Evaluate vehicle paintwork for damage and identify refinish requirements.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVNP101 Evaluate vehicle paintwork for damage and identify refinish requirements

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- evaluate vehicle paintwork for damage and identify refinish requirements on at least two different damaged vehicles
- for each evaluation:
  - determine the impact of decisions in terms of commercial, environmental and safety risks
  - document refinish materials, equipment and processes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to evaluate vehicle paintwork for damage and suggest refinish materials, equipment and processes, including:
  - information provided by supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to evaluate vehicle paintwork for damage and suggest refinish materials, equipment and processes, including:
  - documentation, recording and reporting procedures
- motor vehicle paintwork damage and refinishing techniques, including:
  - damage and faults
  - bolt-on and welded vehicle painted components
  - paint problems, including:
    - blistering
    - delaminating
    - flaking

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        - humidity bubbles
        - inclusions
        - incorrect colour
        - incorrect film build
        - mottle
        - orange peel
        - poor cover or hiding
    - paint types:
        - acrylic enamel
        - air dry enamel
        - clear over base (COB)
        - fillers
        - multi-layer
        - pearls
        - polyurethane
        - special effects
        - waterborne paint
        - two-pack paint
- current assessing and quoting methodologies
- vehicle paint testing equipment and procedures
- current vehicle material allowances
- relevant automotive websites to locate information on current best practice and future trends in the vehicle loss assessment environment
- general insurance industry knowledge, including relevant sections of:
    - contract and insurance law
    - Insurance Contracts Act
    - intellectual property
    - Motor Vehicle Insurance and Repair Industry Code of Conduct
    - state or territory Fair Trading Act
- methods for sourcing paint manufacturer and component supplier specifications, including:
    - vehicle design specifications and drawings
    - repair instructions and procedures
    - component replacement instructions and procedures
- applicable commonwealth, state or territory laws, regulations and standards relating to evaluating the paintwork of a damaged vehicle, and suggesting repair materials, equipment and processes, including:
    - commercial-in-confidence practices
    - environmental regulations
    - intellectual property
    - personal legal liability

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  - applicable Workplace Health and Safety Act
- safety requirements in accordance with applicable commonwealth, state or territory Workplace Health and Safety Act, including:
  - ensuring safe location of vehicle to be inspected
  - following workplace safety procedures
  - identifying potential safety hazards
- tools, materials and equipment relating to evaluating paintwork of a damaged vehicle, and suggesting refinish materials, equipment and processes, including:
  - calculators and general office equipment
  - digital camera
  - computer hardware and software
  - paint code list
  - portable light
  - recording equipment
  - specialist tools, including colour spectrometers and paint film thickness gauges
- workplace policies and procedures relating to evaluating paintwork of a damaged vehicle, and suggesting refinish materials, equipment and processes, including:
  - environment and sustainability
  - quality policies and procedures, including Australian standards
  - industry codes of practice.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have evaluated, e.g. evaluation reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- a range of vehicles with both minor and extensive paint damage
- computer hardware, software and calculators
- internet access
- paint testing equipment
- relevant information, including paint manufacturer specifications
- workplace technology.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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Links

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AURVTA104 Inspect damaged vehicle systems and recommend repairs

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect damaged vehicle systems and recommend repair options. This unit involves preparing for the task, inspecting vehicle system damage, determining the extent of damage by measuring and recommending repair options consistent with original equipment manufacturer (OEM) or authorised agency repair instructions. It also involves completing workplace processes and other documentation, including a final inspection report.

The unit applies to those who work in the automotive body service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for inspection	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret vehicle specifications from OEM or authorised agency and workplace inspection procedures 1.3 Analyse inspection methods, and select and prepare required option for vehicle and job requirements 1.4 Identify hazards associated with the work and manage risks 1.5 Source technical and calibration equipment for vehicle system inspection and check for serviceability

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ELEMENTS	PERFORMANCE CRITERIA
2. Inspect damaged vehicle	2.1 Carry out inspection according to workplace procedures and safety requirements 2.2 Record extent of vehicle damage and damage location during inspection
3. Analyse inspection results	3.1 Compare results with vehicle specifications to identify compliance or non-compliance 3.2 Determine required repair action following analysis of options 3.3 Document repair options with supporting evidence and information 3.4 Complete final inspection report according to workplace procedures
4. Complete work processes	4.1 Check and store technical and calibration equipment according to workplace procedures 4.2 Process workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Numeracy	• Interprets repair and vehicle specifications using metric and imperial systems of measurement • Measures system components and uses basic mathematical operations, including addition and subtraction • Calculates deviations and tolerances from manufacturer specifications.
Oral communication	• Clarifies instructions and asks questions to gather information • Conveys inspection findings and makes repair recommendations.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialised tools and measuring equipment to inspect damage.

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Unit Mapping Information

Supersedes and is equivalent to AURVTA004 Inspect damaged vehicle systems and recommend repairs.

Links

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Assessment Requirements for AURVTA104 Inspect damaged vehicle systems and recommend repairs

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect at least two different vehicles, each with a different damaged system selected from the list below, and recommend required repair options:
  - air conditioning system
  - braking system
  - cooling system
  - electrical system
  - exhaust system
  - steering and suspension system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect damaged vehicle systems and recommend repairs, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect damaged vehicle systems and recommend repairs, including:
  - documentation procedures, including:
    - reporting on repair recommendations
- work health and safety (WHS) requirements relating to inspecting damaged vehicle systems and recommending repairs, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using hand tools and lifting equipment

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- operating principles of vehicle systems, including:
  - air conditioning system
  - braking system
  - cooling system
  - electrical system
  - exhaust system
  - steering and suspension system
- original equipment manufacturer (OEM), authorised agency and component supplier specifications, and recommended repair and replacement procedures, including:
  - vehicle design specifications and drawings
  - repair instructions and methods
  - component replacement instructions
- procedures for inspecting damaged vehicles and determining repair action, including:
  - repair quality requirements
  - inspection and reporting procedures
  - testing and operational assessments for defects.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have inspected, e.g. inspection reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- OEM or authorised agency component specifications and repair methods
- workplace instructions
- two different vehicles with damaged systems requiring inspection
- tools, equipment and materials appropriate for inspecting damaged vehicle systems and determining repair action.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTG101 Repair laminated glass windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to repair chipped or cracked laminated glass windscreens. The unit involves preparing for the task, selecting and using specialist tools and equipment, cleaning and removing moisture from chipped or cracked laminated glass windscreens, injecting resin into chip or crack, finishing repair work to industry standard, and completing workplace processes and documentation.

The unit applies to those who work in the automotive glazing service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Glazing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair laminated glass windscreen	1.1 Identify job requirements from workplace instructions 1.2 Check size of chip or crack against industry repair standards and identify compliance requirements 1.3 Identify required information for repair activity 1.4 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.5 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures

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ELEMENT	PERFORMANCE CRITERIA
2. Repair chipped and cracked laminated glass	2.1 Carry out repair process for chipped or cracked glass according to workplace procedures, manufacturer specifications, industry standards and workplace health and safety and environmental requirements 2.2 Finish glass surface according to manufacturer specifications and safety data sheets (SDS)
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly
Numeracy	• Uses mathematical operations • Calculates quantities of required materials
Planning and organising	• Plans own work requirements • Prioritises action to achieve required outcomes • Ensures tasks are completed within workplace timeframes • Carries out work without causing damage to vehicle or components
Technology	• Uses specialised equipment and tools safely

Unit Mapping Information

Supersedes and is equivalent to AURVTG001 Repair laminated glass windscreens.

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Assessment Requirements for AURVTG101 Repair laminated glass windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- repair at least three different laminated glass windscreens, at least one of which must be chipped and at least one cracked.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to repair laminated glass windscreens, including:
  - AS/NZS 2366.1 Windscreen repairs - Repair procedures
  - AS/NZS 2366.2 Windscreen repairs - Repair systems
  - manufacturer specifications and procedures or equivalent documentation
  - safety data sheets (SDS) relating to repair chemicals and resins
- workplace procedures required to repair laminated glass windscreens, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to repairing laminated glass windscreens, including procedures for:
  - selecting and using personal protective equipment (PPE)

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  - using glass repair systems
  - using safety data sheets (SDS) when working with chemicals and resins
  - material handling and storage
  - protection and safe location of vehicle
- environmental requirements, including procedures for trapping, storing and disposing of waste chemicals, resins and materials
- laminated glass repair systems and procedures for:
  - conducting inspection of vehicle for prior damage
  - identifying types and use of laminated glass repair resins
  - opening windscreen chip or crack to allow access for the repair resin
  - cleaning repair area and removing moisture from laminated glass
  - removing moisture from laminated glass
  - removing air from repair area using a vacuum tool
  - pressure injection of repair resin
  - ensuring capillary action
  - finishing glass surfaces
- procedures for protecting vehicle systems and components during repair work
- pre- and post-inspection procedures for laminated glass windscreen repairs.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the laminated glass windscreens that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive glazing workplace, off-site workplace location or simulated workplace
- workplace instructions
- SDS for repair chemicals and resins
- PPE required to repair laminated glass
- AS/NZS 2366.1 Windscreen repairs - Repair procedures
- AS/NZS 2366.2 Windscreen repairs - Repair systems
- glass repair resins and materials
- three different laminated glass windscreens as specified in the performance evidence requiring repair
- vehicle protection equipment
- cleaning products

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- tools, specialist equipment and materials appropriate for repairing laminated glass.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTG102 Remove and install rubber glazed windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove and install rubber glazed windscreens on a range of vehicles. The unit involves preparing for the task, selecting and using specialist tools and equipment according to removal and installation procedures, applying rubber sealants and adhesives according to manufacturer specifications, cleaning and finishing the windscreen, and completing workplace processes and documentation.

The unit applies to those who work in the automotive glazing service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Glazing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove and install rubber glazed windscreen	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for repair activity 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures
2. Carry out removal and installation activities	2.1 Remove windscreen according to workplace procedures 2.2 Install, seal, and finish replacement windscreen according to

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ELEMENT	PERFORMANCE CRITERIA
	workplace procedures, manufacturer specifications and workplace health and safety and environmental requirements 2.3 Cure adhesive according to adhesive manufacturer specifications and timelines
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications
Oral communication	• Clarifies instructions and procedures • Clearly reports quality issues and job outcomes
Numeracy	• Interprets numerical information in specifications, and records it
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes and minimise waste • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised equipment

Unit Mapping Information

Supersedes and is equivalent to AURVTG002 Remove and install rubber glazed windscreens.

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Assessment Requirements for AURVTG102 Remove and install rubber glazed windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove and install rubber glazed windscreens on at least two different vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove and install rubber windscreens, including:
  - safety data sheets (SDS) for sealants and adhesives
  - manufacturer’s specifications or equivalent documentation
- workplace procedures required to remove and install rubber windscreens including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to removing and installing butyl sealed windscreens, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - material handling and storage
- environmental requirements, including procedures for trapping, storing and disposing of waste materials and chemicals

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- removal and installation methods and techniques for rubber glazed windscreens, including:
  - type and use of windscreen specialist tools and equipment
  - windscreen handling techniques
  - removal methods
  - sealing methods
  - cleaning methods
- procedures for protecting vehicle and components during windscreen removal and installation
- procedures for final inspection of fitted rubber glazed windscreens.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the rubber glazed windscreens they have removed and installed, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive glazing workplace, off-site workplace location or simulated workplace
- workplace instructions
- SDS for sealants and adhesives
- PPE required to remove and install rubber glazed windscreens
- vehicle manufacturer, windscreen supplier, and workplace technical specifications
- two different vehicles or frames requiring a windscreen to be removed and fitted using rubber glazed methods
- vehicle protection covers
- glass cleaning materials
- tools, equipment and materials appropriate for removing and installing rubber glazed windscreens.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTG103 Remove and install butyl sealed windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove and install butyl sealed windscreens. The unit involves preparing for the task, selecting and using specialist tools and equipment, and removal procedures, applying butyl sealants, installing windscreen according to manufacturer specifications, cleaning and finishing the windscreen, and completing workplace processes and documentation.

The unit applies to those who work in the automotive glazing service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Glazing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove and install butyl sealed windscreen	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for repair activity 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment and materials required for windscreen replacement and establish serviceability according to workplace procedures
2. Carry out removal and installation activities	2.1 Carry out windscreen removal according to workplace procedures, manufacturer specifications, workplace health

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ELEMENT	PERFORMANCE CRITERIA
	and safety and environmental requirements 2.2 Install, seal and finish replacement windscreen to workplace procedures 2.3 Cure adhesive according to adhesive manufacturer specifications and timelines
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Organises and interprets technical information from workplace procedures, glass repair system specifications, industry standards and safety data sheets (SDS)
Oral communication	• Clarifies instructions and procedures • Clearly reports quality issues and job outcomes
Planning and organising	• Plans own work requirements • Prioritises action to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised equipment

Unit Mapping Information

Supersedes and is equivalent to AURVTG003 Remove and install butyl sealed windscreens.

Links

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Assessment Requirements for AURVTG103 Remove and install butyl sealed windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove and install butyl sealed windscreens on at least two different vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove and install butyl sealed windscreens, including:
  - safety data sheets (SDS) relating to butyl sealants
  - manufacturer’s specifications or equivalent documentation
- workplace procedures required to remove and install butyl sealed windscreens, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to removing and installing butyl sealed windscreens, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for butyl sealants
  - material handling and storage

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- environmental requirements, including procedures for trapping, storing and disposing of waste materials and chemicals
- removal and installation methods and techniques for butyl sealed windscreens, including:
  - windscreen handling techniques
  - butyl sealing methods
- inspection procedures to ensure correct operation of components prior to carrying out windscreen replacement
- procedures for protecting vehicle and components before and during windscreen removal and installation
- procedures for final inspection of fitted butyl sealed windscreens.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the butyl sealed windscreens they have removed and installed, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive glazing workplace, off-site workplace location or simulated workplace
- workplace instructions
- SDS for butyl sealants
- PPE required to remove and install butyl sealed windscreens
- vehicle manufacturer, windscreen supplier, and specific workplace technical specifications
- two different vehicles or frames requiring windscreen to be fitted using butyl sealed techniques
- vehicle protection covers
- cleaning agents
- tools, equipment and materials appropriate for removing and installing butyl sealed windscreens.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTG104 Remove and install direct glazed windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove and install direct glazed windscreens in a variety of vehicles. The unit involves preparing for the task, selecting and using specialist tools and equipment, removing the windscreen, applying primers, activators and adhesives, installing the windscreen according to manufacturer specifications, cleaning and finishing it, and completing workplace processes and documentation.

The unit applies to those who work in the automotive glazing service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Glazing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove and install direct glazed windscreen	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for repair activity 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Carry out removal and installation activities	2.1 Carry out windscreen removal according to workplace procedures, manufacturer specifications, workplace health

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ELEMENT	PERFORMANCE CRITERIA
	and safety and environmental requirements 2.2 Install, bond and finish replacement windscreen according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.3 Cure adhesive according to adhesive manufacturer specifications and timelines
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Organises and interprets technical information from workplace procedures, glass repair system specifications, industry standards and safety data sheets (SDS)
Oral communication	• Clarifies instructions and procedures • Clearly reports quality issues and job outcomes
Numeracy	• Uses mathematical operations • Calculates adhesive curing times
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Problem solving	• Identifies defects in direct glazed windscreens
Technology	• Uses specialised equipment

Unit Mapping Information

Supersedes and is equivalent to AURVTG004 Remove and install direct glazed windscreens.

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Links

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Assessment Requirements for AURVTG104 Remove and install direct glazed windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove and install direct glazed windscreens on three different vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove and install direct glazed windscreens, including:
  - safety data sheets (SDS) relating to direct glazing chemicals and cleaning agents
  - manufacturer’s specifications or equivalent documentation
- workplace procedures required to remove and install direct glazed windscreens, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to removing and installing direct glazed windscreens, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and lifting equipment
  - using safety data sheets (SDS) for primers, activators and adhesives
  - material handling and storage

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- environmental requirements relating to removing and installing direct glazed windscreens, including procedures for trapping, storing and disposing of waste materials and chemicals
- types and use of windscreen specialist tools, equipment and materials, including:
  - specialist tools for removing direct glazed windscreens
  - lifting assistance tools to help install windscreens
  - direct glazing materials, including:
    - adhesives
    - activators
    - primers
  - cleaning agents
- removal and installation methods and techniques for direct glazed windscreens, including:
  - windscreen handling techniques
  - adhesive methods
  - potential problems and consequences
- inspection of vehicle to ensure correct operation of components prior to carrying out windscreen replacement
- procedures for protecting vehicle and components before and during windscreen removal and installation
- procedures for final inspection of fitted direct glazed windscreens.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the direct glazed windscreens they have removed and installed, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive glazing workplace, off-site workplace location or simulated workplace
- workplace instructions
- SDS for primers, activators and adhesives
- PPE required to remove and install direct glazed windscreens
- vehicle manufacturer, windscreen supplier, and specific workplace technical specifications
- windscreens
- three different vehicles or frames requiring windscreens to be fitted using direct glazing
- vehicle protection covers
- cleaning agents

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- tools, equipment and materials appropriate for removing and installing direct glazed windscreens.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTG105 Remove and install framed type windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove and install framed type windscreens. This unit involves preparing for the task, selecting and using specialist tools and equipment, removing the windscreen, applying sealants, installing the windscreen according to manufacturer specifications, cleaning and finishing it, and completing workplace processes and documentation.

The unit applies to those who work in the automotive glazing service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Glazing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove and install framed type windscreen	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for repair activity 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Carry out removal and installation activities	2.1 Carry out windscreen removal according to workplace procedures, manufacturer specifications, workplace health

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ELEMENT	PERFORMANCE CRITERIA
	and safety and environmental requirements 2.2 Install, seal and finish replacement windscreen according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.3 Cure adhesive according to adhesive manufacturer specifications and timelines
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Organises and interprets technical information from workplace procedures, glass repair system specifications, industry standards and safety data sheets (SDS)
Oral communication	• Clarifies instructions and procedures • Clearly reports quality issues and job outcomes
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Problem solving	• Identifies quality issues and potential problems associated with removing and installing framed type windscreens
Technology	• Uses specialised equipment

Unit Mapping Information

Supersedes and is equivalent to AURVTG005 Remove and install framed type windscreens.

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Assessment Requirements for AURVTG105 Remove and install framed type windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove and install framed type windscreens on at least two different vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove and install framed type windscreens, including:
  - safety data sheets (SDS) relating to sealants
  - manufacturer's specifications or equivalent documentation
- workplace procedures required to remove and install framed type windscreens, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to removing and installing framed type windscreens, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and lifting equipment
  - using SDS for sealants
  - material handling and storage

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- environmental requirements relating to removing and installing framed type windscreens, including procedures for trapping, storing and disposing of waste materials and chemicals
- types and use of windscreen specialist tools, equipment and materials, including:
  - types of framed windscreens
  - lifting assistance tools to help install windscreens
  - sealants and adhesives
  - solvents and glass cleaning materials
- removal and installation methods and techniques for removing and installing framed type windscreens, including:
  - windscreen handling techniques
  - sealing methods
- inspection procedures to ensure correct operation of components prior to carrying out windscreen replacement
- procedures for protecting vehicle and components before and during windscreen removal and installation
- procedures for final inspection of fitted framed type windscreens.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the framed type windscreens they have removed and installed, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive glazing workplace, off-site workplace location or simulated workplace
- workplace instructions
- SDS for sealants
- PPE required to remove and install framed type windscreens
- vehicle manufacturer, windscreen supplier, and specific workplace technical specifications
- frame type windscreens
- two different vehicles or frames requiring framed type windscreen to be fitted
- vehicle protection covers
- tools, equipment and materials appropriate for removing and installing framed type windscreens.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTG109 Remove and install vehicle fixed body glass

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove and install fixed body glass in various applications in vehicles. This unit involves preparing for the task, selecting and using specialist tools and equipment, removing the glass, applying adhesives or sealants, installing the glass according to manufacturer specifications, cleaning and finishing the glass, and completing workplace processes and documentation.

The unit applies to those who work in the automotive glazing service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Glazing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove and install fixed body glass	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for repair activity 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures
2. Carry out removal and installation activities	2.1 Carry out body glass removal according to workplace procedures, manufacturer specifications, workplace health

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ELEMENT	PERFORMANCE CRITERIA
	and safety and environmental requirements 2.2 Install, bond or seal and finish fixed body glass component according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.3 Cure adhesive according to adhesive manufacturer specifications and timelines
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Organises and interprets technical information from workplace procedures, glass repair system specifications, industry standards and safety data sheets (SDS)
Oral communication	• Clarifies instructions and procedures • Clearly reports quality issues and job outcomes
Numeracy	• Uses mathematical operations • Calculates adhesive curing times
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Problem solving	• Identifies fixed body glass defects
Technology	• Uses specialised equipment

Unit Mapping Information

Supersedes and is equivalent to AURVTG009 Remove and install vehicle fixed body glass.

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Assessment Requirements for AURVTG109 Remove and install vehicle fixed body glass

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove and install:
  - at least one direct glazed fixed body glass
  - at least one rubber glazed fixed body glass.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove and install vehicle fixed body glass, including:
  - safety data sheets (SDS) relating to direct glazing chemicals and cleaning agents
  - manufacturer’s specifications or equivalent documentation
- workplace procedures required to remove and install vehicle fixed body glass, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to removing and installing vehicle fixed body glass, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and lifting equipment

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    - using safety data sheets (SDS) for adhesives and sealants
    - material handling and storage
- environmental requirements, including procedures for trapping, storing and disposing of waste materials and chemicals
- types and use of fixed body glass tools and equipment, including:
    - adhesive and sealant types, including:
        - urethane for direct glazed fixed body glass
        - sealants for rubber glazed fixed body glass
    - solvents and cleaning materials
- fixed body glass removal and installation methods and techniques, including:
    - glass and material handling techniques
    - bonding and sealing methods
- procedures for protecting vehicle and components during removal and installation work
- procedures for final inspection of fitted fixed body glass.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the fixed body glass they have removed and installed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive glazing workplace, off-site workplace location or simulated workplace
- workplace instructions
- PPE to remove and install fixed body glass
- SDS for adhesives and sealants
- vehicle manufacturer, fixed body glass supplier, and specific workplace technical specifications
- body glass components as specified in the performance evidence
- vehicles or frames requiring fixed body glass to be fitted
- glass sealants and adhesive
- glass cleaning materials
- tools, equipment and materials appropriate for removing and installing fixed body glass.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTG110 Remove and install vehicle movable body glass

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove and install movable body glass in various applications in vehicles. This unit involves preparing for the task, selecting and using specialist tools and equipment, selecting materials, removing and installing glass according to manufacturer specifications, cleaning and finishing the glass, and completing workplace processes and documentation.

The unit applies to those who work in the automotive glazing service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Glazing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove and install movable body glass	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for repair activity 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment and materials required for windscreen replacement and establish serviceability according to workplace procedures
2. Carry out removal and installation activities	2.1 Identify vehicle airbags and supplementary restraint systems which may be affected by work and escalate to required

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ELEMENT	PERFORMANCE CRITERIA
	personnel according to workplace procedures 2.1 Remove moveable body glass component according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.2 Install and finish new moveable glass component according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.3 Cure adhesive according to adhesive manufacturer specifications and timelines
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Organises and interprets technical information from workplace procedures, glass repair system specifications, industry standards and safety data sheets (SDS)
Oral communication	• Clarifies instructions and procedures • Clearly reports quality issues and job outcomes
Numeracy	• Uses mathematical operations • Calculates quantities of required materials
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Problem solving	• Identifies movable body glass defect and refers problems to appropriate person
Technology	• Uses specialised equipment

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Unit Mapping Information

Supersedes and is equivalent to AURVTG010 Remove and install vehicle movable body glass.

Links

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Assessment Requirements for AURVTG110 Remove and install vehicle movable body glass

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove and install at least two different movable body glass components in a vehicle.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove and install moveable body glass, including:
  - safety data sheets (SDS) relating to fixed body glass
  - manufacturer’s specifications or equivalent documentation
- workplace procedures required to remove and install moveable body glass, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to removing and installing vehicle movable body glass, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and lifting equipment
  - using safety data sheets (SDS) for adhesives
  - material handling and storage

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- environmental requirements relating to removing and installing vehicle movable body glass, including procedures for trapping, storing and disposing of waste materials and chemicals
- movable body glass removal and installation methods and techniques, including:
  - types and uses of movable body glass tools and equipment
  - glass and material handling techniques
  - adhesive types and bonding methods
  - potential problems associated with removal and installation, and their consequences
  - movable body glass location
  - testing procedures
- procedures for protecting vehicle and components during removal and installation work
- procedures for final inspection of fitted movable body glass.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the movable body glass they have removed and installed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive glazing workplace, off-site workplace location or simulated workplace
- workplace instructions
- PPE to remove and install movable body glass
- SDS for adhesives
- supplier or manufacturer specifications or fitting instructions
- two different movable body glass components
- a vehicle requiring movable body glass to be removed and installed
- movable body glass installation materials, including glass sealants and adhesives
- glass cleaning materials
- tools, equipment and materials appropriate for removing and installing movable body glass.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTG112 Remove and install heavy vehicle rubber and direct glazed windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove and install rubber and urethane glazed heavy vehicle windscreens. This unit involves preparing for the task, selecting and using specialist tools and equipment, removing the damaged windscreen, cutting a replacement windscreen according to original size, preparing and applying windscreen sealing rubber, applying primers, activators and adhesives according to manufacturer specifications, cleaning and finishing the windscreen, and completing workplace processes and documentation.

The unit applies to those who work in the automotive glazing service and repair industry. The windscreens include those of trucks, buses and coaches.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Glazing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove and install heavy vehicle rubber or direct glazed windscreen	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for repair activity 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment and chemicals required for repair

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ELEMENT	PERFORMANCE CRITERIA
	activity and establish serviceability according to workplace procedures
2. Remove and install heavy vehicle rubber or direct glazed windscreen	2.1 Remove windscreen according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.2 Cut, install, seal or bond and finish replacement windscreen according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.3 Cure adhesive according to adhesive manufacturer specifications and timelines
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and safety data sheets (SDS)
Oral communication	• Clarifies instructions and procedures • Clearly reports quality issues and job outcomes

Numeracy	• Uses mathematical operations, including addition and subtraction, to calculate:
	  • cutting and fitting dimensions
	  • quantities of required materials

Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Problem solving	• Identifies quality issues and potential problems associated with removing and installing heavy vehicle rubber and direct

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SKILL	DESCRIPTION
	glazed windscreens
Technology	• Uses specialised equipment

Unit Mapping Information

Supersedes and is equivalent to AURVTG012 Remove and install heavy vehicle rubber and direct glazed windscreens.

Links

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Assessment Requirements for AURVTG112 Remove and install heavy vehicle rubber and direct glazed windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove and install windscreens in at least two different heavy vehicles, in which the work must involve:
  - at least one rubber glazed windscreen
  - at least one direct glazed windscreen.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove and install heavy vehicle rubber and direct glazed windscreens, including:
  - safety data sheets (SDS) relating to primers, activators and adhesives
  - manufacturer's specifications or equivalent documentation
- workplace procedures required to remove and install heavy vehicle rubber and direct glazed windscreens including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) and requirements relating to removing and installing heavy vehicle rubber and direct glazed windscreens, including procedures for:

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    - selecting and using personal protective equipment (PPE)
    - using tools and lifting equipment
    - working at height using harnesses and scaffolds
    - using safety data sheets (SDS) for primers, activators and adhesives
    - windscreen handling and storage
- environmental requirements relating to removing and installing heavy vehicle rubber and direct glazed windscreens, including procedures for trapping, storing and disposing of waste materials and chemicals
- types and uses of windscreen specialist tools, equipment and materials, including:
    - types of rubber and direct glazed windscreens
    - windscreen support systems and work height safety harness equipment
    - rubber glazing materials, including:
        - rubber sections
        - sealants
    - direct glazing materials, including:
        - adhesives
        - activators
        - primers
    - cleaning materials
- removal and installation methods and techniques for heavy vehicle rubber and direct glazed windscreens, including:
    - windscreen handling techniques
    - sealing methods
    - adhesive curing times and finishing techniques
- procedures for protecting vehicle and components during removal and installation of windscreens
- procedures for final inspection of fitted heavy vehicle rubber and direct glazed windscreens.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle rubber and direct glazed windscreens they have removed and installed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive glazing workplace, off-site workplace location or simulated workplace

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- workplace instructions
- SDS for primers, activators and adhesives
- PPE required to remove and install heavy vehicle rubber and direct glazed windscreens
- safety harnesses and scaffold equipment to remove and install large vehicle windscreens
- heavy vehicle manufacturer and windscreen supplier specifications and fitting instructions
- heavy vehicle rubber and direct glazed windscreens
- two different types of heavy vehicles requiring rubber or direct glazed windscreens to be fitted
- vehicle protection covers
- tools, equipment and materials appropriate for removing and installing heavy vehicle rubber and direct glazed windscreens.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTG113 Remove and install large vehicle windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge outcomes required to remove and install large vehicle windscreens. This unit involves preparing for the task, selecting and using specialist tools and equipment, removing the damaged windscreen, cutting a replacement windscreen according to original size, applying adhesives according to manufacturer specifications, cleaning and finishing the windscreen, and completing workplace processes and documentation.

The unit applies to those who work in the automotive glazing service and repair industry. The windscreens include those of large commercial, mining and agricultural vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Glazing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove and install large vehicle windscreen	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for repair activity 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment, materials and chemicals required for repair activity and establish serviceability according to workplace procedures

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ELEMENT	PERFORMANCE CRITERIA
2. Remove, cut and install large vehicle windscreen	2.1 Remove windscreen according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.2 Cut, install, bond or seal, and finish windscreen according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.3 Cure adhesive according to adhesive manufacturer specifications and timeframes
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and safety data sheets (SDS)
Oral communication	• Clarifies instructions and procedures • Clearly reports quality issues and job outcomes

Numeracy	• Uses mathematical operations, including addition and subtraction
	• Calculates:
	  • cutting and fitting measurements
	  • quantities of required materials
	• Interprets numerical information in specifications, and records it accurately

Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Problem solving	• Identifies quality issues and potential problems associated with removing and installing large vehicle windscreens

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SKILL	DESCRIPTION
Technology	• Uses specialised equipment

Unit Mapping Information

Supersedes and is equivalent to AURVTG013 Remove and install large vehicle windscreens.

Links

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Assessment Requirements for AURVTG113 Remove and install large vehicle windscreens

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove and install windscreens on two different large vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to repair laminated glass windscreens, including:
  - safety data sheets (SDS) relating to adhesives
  - manufacturer's specifications or equivalent documentation
- workplace procedures required to repair laminated glass windscreens including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to removing and installing large vehicle windscreens, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and lifting and support equipment
  - working at heights using harnesses and scaffolds
  - using safety data sheets (SDS) for adhesives

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    - material handling and storage
- environmental requirements relating to removing and installing large vehicle windscreens, including procedures for trapping, storing and disposing of waste materials and chemicals
- type and uses of windscreen specialist tools, equipment and materials including:
    - manufacturer or windscreen supplier approved adhesives and sealants
    - flat laminated glass
    - material for templates
    - cleaning solvents and materials
    - application equipment for adhesives and sealants
    - template preparation equipment
    - glass cutting tools and equipment
- removal and installation methods and techniques for different types of large vehicle windscreens, including:
    - rubber and direct glazed installation methods
    - windscreen handling techniques
    - flat laminated glass cutting equipment and processes
    - windscreen attachment methods, including frames, clamps and special rubber sections
- types of glass, including:
    - sealing methods
    - adhesive curing times and finishing techniques
    - potential problems and consequences
- procedures for protecting vehicle and components during windscreen removal and installation work
- procedures for final inspection of fitted large vehicle windscreens.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the large vehicle windscreens they have removed and installed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive glazing workplace, off-site workplace location or simulated workplace
- workplace instructions
- SDS for adhesives
- PPE required to remove and install large vehicle windscreens, including safety harnesses and scaffold equipment

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- vehicle manufacturer, windscreen supplier, and specific workplace technical specifications
- materials for preparing templates
- windscreen or glass components
- flat laminated glass and cutting equipment
- two different large vehicles requiring windscreens to be fitted
- vehicle protection covers
- cleaning agents
- tools, equipment and materials appropriate for removing and installing large vehicle windscreens.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTN102 Carry out non-structural vehicle panel repairs

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to perform non-structural vehicle panel repairs to pre-paint condition. This unit involves preparing for the task, selecting and using specialist tools and equipment, repairing panels according to manufacturer specifications and workplace procedures, and completing workplace processes and documentation.

The unit applies to those working in the automotive body service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for non-structural panel repairs	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret workplace procedures and product manufacturer and original equipment manufacturer (OEM) specifications 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check equipment and hand and power tools for serviceability 1.5 Plan work to minimise waste according to workplace procedures
2. Carry out non-structural panel	2.1 Repair panels using required repair methods, materials and equipment according to OEM specifications and safety and

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ELEMENTS	PERFORMANCE CRITERIA
repairs to pre-paint condition	environmental requirements 2.2 Finish repairs to pre-paint condition according to workplace procedures 2.3 Obtain advice from required personnel if repair interferes with the vehicle's trim or electrical and mechanical systems
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates specifications and required information efficiently • Develops a sequenced plan for a specific task.
Numeracy	• Uses basic mathematical operations, including addition, subtraction, multiplication and division, to calculate filler quantities and mixing ratios • Sets repair tools and equipment.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Teamwork	• Seeks advice from and uses strengths of team members and supervisor.
Technology	• Uses tools and measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTN002 Carry out non-structural vehicle panel repairs.

Links

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Assessment Requirements for AURVTN102 Carry out non-structural vehicle panel repairs

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out non-structural vehicle panel repairs on at least three different vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out non-structural vehicle panel repairs, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to carry out non-structural vehicle panel repairs, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to carrying out non-structural vehicle panel repairs, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling vehicle panels
  - using tools and equipment

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- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- panel repair methods and techniques, including:
  - panel repair tools, equipment and materials
  - panel beating techniques
  - body filler types and recommended applications
  - abrasive grades and types
  - body filler finishing procedures
  - repair quality requirements to pre-paint condition
- procedures for final inspection of completed non-structural panel repairs.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the non-structural panel repairs that they have carried out, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- original equipment manufacturer (OEM) and component supplier repair specifications
- PPE to carry out non-structural vehicle panel repairs
- three different vehicles with non-structural damage requiring repair
- body filler
- tools, equipment and materials appropriate for carrying out non-structural panel repairs.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTN104 Remove, replace and align bolt-on vehicle body panels and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove, reassemble and align vehicle body panels as part of vehicle body repair activities. This unit involves preparing for the task, selecting and using specialist tools and equipment, following original equipment manufacturer (OEM) or authorised agency specifications and workplace procedures. It also involves carrying out a final alignment inspection and completing workplace processes and documentation.

The unit applies to those working in the automotive body service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove, replace and align bolt-on vehicle body panels and components	1.1 Determine job requirements from workplace instructions 1.2 Determine removal, replacement and alignment methods from workplace procedures and vehicle specifications 1.3 Identify hazards associated with the work and manage risks 1.4 Identify and check tools and equipment for serviceability 1.5 Prepare vehicle and work area according to workplace procedures 1.6 Plan work to minimise waste

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ELEMENTS	PERFORMANCE CRITERIA
2. Carry out removal, replacement and alignment activities	2.1 Remove bolt-on body panels and components according to vehicle specifications and safety requirements 2.2 Tag and store removed parts according to workplace procedures 2.3 Replace bolt-on panels and components using required processes, sealants, materials and equipment 2.4 Align bolt-on panels and components without causing damage to vehicle or components
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Numeracy	• Uses mathematical operations including addition and subtraction, to calculate alignment measurements • Sets tools and equipment • Interprets and records numerical information.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses tools and measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTN004 Remove, replace and align bolt-on vehicle body panels and components.

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Assessment Requirements for AURVTN104 Remove, replace and align bolt-on vehicle body panels and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove, replace and align bolt-on body panels and components on at least four different vehicles, in which the work for at least one of the vehicles must involve at least one combination of three adjoining vehicle bolt-on panels and components.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove, replace and align bolt-on vehicle body panels and components, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to remove, replace and align bolt-on vehicle body panels and components, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to removing, replacing and aligning bolt-on vehicle panels and components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling vehicle panels and components

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    - using tools and equipment
- location and content of accessing vehicle specifications
- bolt-on panels and components, including:
    - guards
    - doors and door components
    - bonnets
    - boot lids
    - bumper bars
    - light assemblies
    - body mouldings and badges
- removal, replacement and alignment methods and techniques, including:
    - measuring bolt-on panel gaps
    - electronic warning sensors
    - tagging and storing bolt-on panels and components
    - panel sealant and application
    - gap measuring
    - headlight and panel alignment techniques
- procedures for protecting vehicle and components during removal, replacement and alignment work, including protecting electrical, electronic and mechanical systems
- procedures for final inspection of fitted bolt-on panels and components.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bolt-on panels and components that they have removed, replaced and aligned, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- vehicle manufacturer specifications
- four different vehicles requiring the removal, replacement and alignment of bolt-on panels, sections and components
- bolt-on body panels and components
- tools, equipment and materials appropriate for removing, replacing and aligning bolt-on panels and components, including required PPE.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTN111 Remove and install vehicle rear vision mirrors

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove and install rear vision mirrors attached to vehicle windscreens. This unit involves preparing for the task, selecting and using tools and equipment, selecting glass adhesives, cleaning glass surface, apply adhesive, positioning and securing rear vision mirror, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Body

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove and install rear vision mirror	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for repair activity 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for repair activity and establish serviceability according to workplace procedures

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ELEMENT	PERFORMANCE CRITERIA
2. Remove and install rear vision mirror	2.1 Carry out rear vision mirror removal according to workplace procedures, workplace health and safety and environmental requirements 2.2 Clean and prepare glass surface according to workplace procedures 2.3 Prepare and apply adhesive to glass surface 2.4 Position and install mirror according to workplace and manufacturer procedures and manufacturer specifications
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required information efficiently
Reading	• Organises and interprets technical information from workplace procedures, manufacturer specifications and safety data sheets (SDS)
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly
Numeracy	• Measures location for mirror on windscreen and positions it accurately
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes
Technology	• Uses specialised tools and measuring equipment

Unit Mapping Information

Supersedes and is equivalent to AURVTN011 Remove and install rear vision mirrors.

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Assessment Requirements for AURVTN111 Remove and install vehicle rear vision mirrors

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove and install rear vision mirrors on three different vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove and replace rear vision mirrors, including:
  - safety data sheets (SDS) relating to adhesives
  - manufacturer's specifications or equivalent documentation
- workplace procedures required to remove and replace rear vision mirrors, including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to removing and installing vehicle rear vision mirrors, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools, equipment and adhesives
  - using safety data sheets (SDS) for adhesives
  - cleaning glass surfaces

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- environmental requirements relating to removing and installing vehicle rear vision mirrors, including procedures for trapping, storing and disposing of waste materials and adhesives
- mirror removal and installation methods and techniques, including:
  - types and use of equipment and materials
  - glass and rear vision mirror surface cleaning
  - types of mirror adhesives and their application
  - correct placement and location of rear vision mirrors
- procedures for protecting vehicle and components when removing and installing mirrors
- procedures for final inspection of fitted rear vision mirrors.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the rear vision mirrors they have removed and installed, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- SDS for adhesives
- adhesives or adhesive system
- cleaning products
- three different vehicles requiring the removal and installation of rear vision mirrors
- tools, equipment and materials appropriate for removing and installing rear vision mirrors.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTN113 Carry out paint-less dent repairs on vehicle body panels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to repair shallow dents and hail damaged body panels using paint-less dent repair (PDR) processes. This unit involves preparing for the task, selecting and using specialist tools, repairing vehicle panels to pre-damage condition using PDR methods, and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to carry out PDR repairs	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret workplace procedures and PDR tool manufacturer specifications 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools and equipment for serviceability 1.5 Plan work to minimise waste and use time efficiently
2. Repair panel using PDR process	2.1 Prepare vehicle panels and work area for PDR work 2.2 Fabricate and modify PDR tools to suit work requirements

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Repair components using required PDR methods and equipment according to workplace procedures and safety requirements 2.4 Obtain advice from authorised personnel if repair interferes with vehicle trim or electrical systems 2.5 Finish painted surface according to workplace procedures, and check PDR repairs against workplace instructions and workplace quality standards and finish requirements
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Numeracy	• Interprets and records numerical information in specifications.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Teamwork	• Seeks advice and uses strengths of authorised personnel and team members in carrying out repair process.
Technology	• Uses specialist tools and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTN013 Carry out paint-less dent repairs on vehicle body panels.

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Assessment Requirements for AURVTN113 Carry out paint-less dent repairs on vehicle body panels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out paint-less dent repairs (PDR) on at least ten different vehicle body panels, in which the work for at least one repair must involve completing PDR on a panel with shallow dents to a minimum dimension of 20 mm diameter x 2 mm depth.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out paint-less dent repairs on vehicle body panels, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to carry out paint-less dent repairs on vehicle body panels, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to carrying out PDR on vehicle body panels, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling vehicle body panels

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- PDR methods and techniques, including:
  - type and use of PDR tools, lighting equipment, and paint polishing materials
  - establishing lighting requirements
  - trim removal processes
  - paint film build and its effects on PDR
  - PDR push to paint surface
  - paint finishes, including peel and texture
  - paint fractures and delamination
  - corrosion prevention resulting from PDR
  - types of dents appropriate to PDR method
- PDR techniques, including pushing, pressing, reforming, levering, pulling, gluing, and suction cups
- PDR tools and equipment, including:
  - PDR hand tools
  - lighting
  - personal protective equipment
- PDR finish and quality standard
- procedures for final inspection of completed PDR repairs.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the PDR repairs they have carried out, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- vehicles, panels and components requiring PDR as specified in the performance evidence
- tools, equipment and materials appropriate for carrying out paint-less dent repairs, including required PPE.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTN115 Repair vehicle body panels using metal finishing

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to carry out metal finishing, incorporating heat shrinking, to repair vehicle body panels. This unit involves preparing for the task, selecting and using specialist tools and equipment, setting an oxyacetylene plant, panel beating and file finishing vehicle panels to pre-paint condition without using body fillers, and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry. It does not cover aluminium panels.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair vehicle body panel using metal finishing	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret repair information from original equipment manufacturer (OEM) or authorised agency's specifications 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check materials, tools and equipment for serviceability 1.5 Plan work to identify repair methods, minimise waste, and use time efficiently

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ELEMENTS	PERFORMANCE CRITERIA
2. Carry out metal finishing and heat shrinking activities	2.1 Repair components using OEM or authorised agency's required methods and equipment 2.2 Remove dents using hammer and dolly techniques, and file finish panel surface to pre-paint condition 2.3 Apply heat shrinking if panel surface is over stretched using an oxyacetylene plant 2.4 Use dust and fume collection equipment during repair process according to safety and environmental requirements 2.5 Seek and organise assistance where repair of components disturbs vehicle trim or electrical, mechanical or air conditioning systems 2.6 Check repairs to ensure work is completed to workplace, OEM or authorised agency specifications and requirements
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Develops a sequenced plan for a specific task.
Numeracy	• Interprets and sets oxyacetylene plant working pressures.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Teamwork	• Seeks advice and assistance, and uses strengths of authorised personnel.
Problem solving	• Identifies potential problems associated with body panel repairs, including those associated with disturbance to vehicle trim or electrical, mechanical or air conditioning systems.
Technology	• Uses specialised equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURVTN015 Repair vehicle body panels using metal finishing.

Links

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Assessment Requirements for AURVTN115 Repair vehicle body panels using metal finishing

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- complete repairs using metal finishing techniques to the following damaged vehicle body panels:
  - front guard or quarter panel with a minimum damage size of 200 mm x 200 mm
  - door skin panel that includes:
    - body style lines
    - pressings damage.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to repair vehicle body panels using metal finishing, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to repair vehicle body panels using metal finishing, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to repairing vehicle body panels using metal finishing, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling body panels
  - using tools and equipment, including dust and fume collection equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- original equipment manufacturer (OEM) or authorised agency repair procedures and specifications
- high strength steel repair processes
- repair processes for mild steel body panel, splits, tears and dents
- tools and equipment for body panel repair techniques, including:
  - personal protective equipment
  - body repair hand tools, including:
    - panel hammer
    - hand dolly
    - body file
  - heat shrinking equipment
- body panel repair techniques and methods, including:
  - use of metal finishing repair tools and equipment
  - panel stripping and preparation
  - hand dolly planishing and file finishing
  - file finishing vehicle body panel without using body filler
  - heat shrinking using oxyacetylene plant
  - pre-paint panel finishing
- procedures for final inspection of metal finished repair.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle body panels that they have repaired using metal finishing techniques, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required for metal finishing

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- materials required to repair vehicle body panels using metal finishing
- damaged body panels to be repaired as specified in the performance evidence
- hand tools, equipment and materials appropriate for metal finishing vehicle body panels.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTN116 Repair vehicle body panels using filler

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to repair vehicle body panels using filler. This unit involves preparing for the task, selecting and using specialist tools and equipment, identifying body filler type and specifications, calculating and mixing body filler and applying to panels, completing repairs to pre-paint condition, and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry. Filler used in repair work must include two-pack polyester.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair body panels using filler	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret manufacturer specifications for body filler application and required safety data sheets (SDS) 1.3 Select materials required for body panel repair and check for quality 1.4 Identify hazards associated with the work and manage risks 1.5 Select and check tools and equipment for serviceability 1.6 Prepare work area and plan work to minimise waste and use time efficiently

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ELEMENTS	PERFORMANCE CRITERIA
2. Carry out repair activities using filler	2.1 Remove paint and prepare damaged panel for filler repair 2.2 Rectify damaged panel sections using panel beating techniques to workplace pre-filler application standard 2.3 Mix body filler according to manufacturer specifications 2.4 Apply filler to repair panels using required body filler instructions and equipment according to workplace procedures, body filler manufacturer specifications, and safety and environmental requirements 2.5 Complete repairs to pre-paint condition
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.

Numeracy	• Uses basic mathematical operations, including addition, subtraction, multiplication and division, to calculate ratios for dilution rates to:
	  • calculate body filler quantities and mix required ratios
	  • calculate surface area.

Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Problem solving	• Determines underlying causes of faults • Identifies risk factors and takes action to minimise risk.
Technology	• Uses specialised tools and measuring equipment.

Unit Mapping Information

Supersedes and equivalent to AURVTN016 Repair vehicle body panels using filler.

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Assessment Requirements for AURVTN116 Repair vehicle body panels using filler

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- repair body panels on at least five different vehicles using body filler
- in the course of the above work the following repairs must be conducted on at least one occasion:
  - one dent to a maximum depth of 3 mm
  - one damaged body panel with minimum dimension of approximately 200 mm x 300 mm, including style lines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to repair vehicle body panels using filler, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to repair vehicle body panels using filler, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to repairing vehicle body panels using filler, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling body panels
  - using safety data sheets (SDS) for body fillers
  - selecting fillers
  - using tools and equipment, including dust and fume collection equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- body filler manufacturer specifications
- types of body fillers and application methods and techniques, including:
  - preparing surface and removing paint
  - mixing and applying body fillers
  - storage to prevent contamination
  - weld-on dent pulling systems
  - pre-paint panel finishing
- procedures and requirements for protecting vehicle and components when using filler to repair body panels
- procedures for final inspection of body filler repair.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle body panels that they have repaired using body filler, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- SDS for body fillers
- five different vehicles requiring the filler repair work on their body panels specified in the performance evidence
- tools, equipment and materials appropriate for repairing body panels using filler, including:
  - required PPE
  - body filler materials, including two-pack polyester filler.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTN119 Repair vehicle structural damage by riveting

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to repair structural damage on a vehicle, using riveting techniques. This unit involves preparing for the task, selecting and using specialist tools and equipment, repairing or replacing riveted panels, including straightening, realignment and attachment procedures, finishing repair to pre-paint condition, and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair riveted structural damage	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret structural repair and riveting information from original equipment manufacturer (OEM) or authorised agency's specifications and workplace procedures 1.3 Select and check materials for repair for quality 1.4 Identify hazards associated with the work and manage risks 1.5 Select tools and equipment and check for serviceability 1.6 Prepare work area and plan work to minimise waste and use time efficiently
2. Carry out structural	2.1 Repair or replace components according to OEM or approved

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ELEMENTS	PERFORMANCE CRITERIA
riveting procedures	agency's riveting procedures, and equipment, safety and environmental requirements 2.2 Seek assistance from authorised personnel where straightening, realigning and riveting of components disturb vehicle trim or electrical, mechanical or air conditioning systems
3. Carry out body measuring procedures	3.1 Measure repaired and riveted structural components using workplace instructions and OEM or authorised agency's approved methods and equipment 3.2 Carry out measuring activities and compare measurements with OEM or authorised agency's specifications and workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.

Numeracy	• Uses basic mathematical operations, including addition and subtraction, to:
	  • calculate repair tolerances
	  • measure accurately
	• Set and adjust riveting equipment.

Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Problem solving	• Refers problems outside area of responsibility to required person.
Technology	• Uses specialised tools and equipment • Uses internet to research OEM procedures.

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Unit Mapping Information

Supersedes and is equivalent to AURVTN019 Repair vehicle structural damage by riveting.

Links

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Assessment Requirements for AURVTN119 Repair vehicle structural damage by riveting

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- complete repair and riveting activities on at least three different damaged vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to repair vehicle structural damage by riveting, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to repair vehicle structural damage by riveting, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to repairing vehicle structural damage by riveting, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling vehicle panels
  - using tools and equipment

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- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- vehicle components for repair, including radiator support riveted assemblies and skirt and rail assemblies
- original equipment manufacturer (OEM) or authorised agency's approved riveting instructions, rivet specifications and quality standards
- tools and equipment relating to repairing vehicle structural damage by riveting, including:
  - personal protective equipment (PPE)
  - hand and power tools and equipment
  - hydraulic pneumatic push/pull equipment
  - OEM or authorised agency's approved riveting and measuring equipment
  - straightening systems
- riveting procedures and techniques, including:
  - use of repair, riveting and measuring equipment
  - hydraulic straightening and realigning
  - body component measuring
  - panel replacement
- procedures for final inspection of riveted structural repair.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle structural damage they have repaired using riveting techniques, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- OEM or authorised agency's approved repair and riveting procedures and specifications
- PPE required to repair and rivet structurally damaged sections
- materials required to rivet, repair and replace structurally damaged sections
- three different structurally damaged vehicles requiring repair by riveting
- tools, equipment and materials appropriate for repairing structural damage by riveting.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTN120 Remove and replace major welded panels on vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove and replace vehicle welded panels and panel sections. This unit involves preparing for the task, selecting and using specialist tools and equipment, removing, repairing, aligning and welding major vehicle panels and sections. It also includes finishing repair to pre-paint condition and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to replace major welded panels	1.1 Determine job requirements from workplace instructions 1.2 Source vehicle specifications and original equipment manufacturer (OEM) or authorised agency's recommended repair procedures and check against workplace instructions 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools and equipment for serviceability 1.5 Plan work to identify methods, minimise waste, and use time efficiently

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ELEMENTS	PERFORMANCE CRITERIA
2. Remove welded panels	2.1 Remove major welded panels and sections according to OEM or authorised agency's approved methods and safety and environmental requirements 2.2 Drill out spot welds using recommended drill bit and drill diameters 2.3 Seek assistance from authorised personnel where removal of welded panels and sections disturbs vehicle trim or electrical, mechanical or air conditioning systems
3. Replace and align welded panels	3.1 Replace, align and weld panel sections using approved OEM or authorised agency's methods and procedures 3.2 Carry out replacement, alignment and welding of panel section to pre-paint condition
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.

Numeracy	• Measures using universal measuring system
	• Uses basic mathematical operations, including addition and subtraction, to calculate:
	  • OEM or authorised agency repair measurements and tolerances
	  • material requirements
	• Adjusts welder displays settings
	• Sets alignment equipment.

Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Problem solving	• Refers problems outside area of responsibility to required person.

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SKILL	DESCRIPTION
Technology	• Uses specialised tools and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTN020 Remove and replace major welded panels on vehicles.

Links

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Assessment Requirements for AURVTN120 Remove and replace major welded panels on vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove and replace major welded panels on at least three different vehicles, where each replacement must involve any three of the following:
  - quarter panel
  - turret
  - side panel
  - beaver panel
  - outer wheel house or similar non-structural panel
- during above work, conduct welding according to specifications of original equipment manufacturer (OEM) or authorised agency.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove and replace major welded panels on vehicles, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to remove and replace major welded panels on vehicles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to removing and replacing major welded panels on vehicles, including procedures for:
    - selecting and using personal protective equipment (PPE)
    - manually handling vehicle panels
    - using tools and equipment when welding panels
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- tools and equipment relating to removing and replacing major welded panels on vehicles, including:
    - personal protective equipment (PPE)
    - universal measuring system
    - hand and power tools and equipment
    - approved heating equipment of OEM or authorised agency, as required
    - approved welding equipment of OEM or authorised agency
- OEM or authorised agency vehicle specifications
- major welded panel replacement procedures and techniques
- repair and alignment methods and techniques, including:
    - use of tools and equipment, including tagging methods as required
    - approved welding processes
    - types and location of high strength steel (HSS)
- procedures for protecting vehicle and components when replacing panels
- procedures for final inspection of welded panel sections.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the major welded vehicle panels that they have replaced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- PPE required to replace major welded vehicle panels
- universal measuring system

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- OEM or authorised agency's specifications
- OEM or authorised agency's approved welding equipment
- three different vehicles or sections of vehicle requiring replacement of major welded panels
- tools, equipment and materials appropriate for replacing major welded vehicle panels.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTN123 Repair adhesive bonded structural damage on vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to repair bonded vehicle body panels and structures using an adhesive attachment method. This unit involves preparing for the task, selecting and using specialist tools and equipment, removing bonded structural damage, repairing panel sections, applying approved adhesives and realigning the structural repair, and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair adhesive bonded structural damage	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret original equipment manufacturer (OEM) or authorised agency's required bonding and repair procedures 1.3 Select and prepare adhesive specifications, application instructions and bonding materials 1.4 Identify hazards associated with the work and manage risks 1.5 Select and check adhesive application tools and equipment and personal protective equipment (PPE) for serviceability 1.6 Plan work to identify adhesive bonding methods, minimise

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ELEMENTS	PERFORMANCE CRITERIA
	waste, and use time efficiently
2. Remove and replace bonded sections	2.1 Check replacement panels and components against vehicle specifications and for quality 2.2 Remove bonded panels and structures according to OEM procedures and without causing damage to system or components 2.3 Repair bonded panels and structures according to OEM procedures and store until required 2.4 Refit bonded panels and structures using approved bonding methods, adhesives, materials and equipment according to OEM or authorised agency specifications, and safety and environmental requirements 2.5 Select and apply sealants according to OEM or authorised agency's specifications and workplace procedures 2.6 Clean bonded panels and structures without causing damage to systems or components
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.

Numeracy	• Reads tape measure and takes measurements
	• Uses basic mathematical operations, including addition, subtraction, multiplication and division, to:
	  • estimate surface area according to bonding instructions
	  • estimate adhesive curing times
	  • calculate quantities of required materials
	• Interprets adhesive code, type and grade.

Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.

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SKILL	DESCRIPTION
Problem solving	• Identifies quality issues and potential problems associated with repair of adhesive bonded structural damage.
Technology	• Uses specialised equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTN023 Remove adhesive bonded structural damage on vehicles.

Links

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Assessment Requirements for AURVTN123 Repair adhesive bonded structural damage on vehicles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove and replace bonded panels on at least two different vehicles, in which the work in total must include at least two of the following:
  - door skins
  - vehicle turret
  - quarter panel
  - boot floor section
- in the course of the above work, use the following bonding methods and securing techniques:
  - welding and bonding
  - rivet or screwing and bonding.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to repair adhesive bonded structural damage on vehicles, including procedures for:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to repair adhesive bonded structural damage on vehicles, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to repairing adhesive bonded structural damage on vehicles, including procedures for:
    - selecting and using personal protective equipment (PPE)
    - using safety data sheets (SDS) for adhesives
    - manual handling vehicle panels
    - storing adhesives
    - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials and adhesives
- tools and equipment relating to repairing adhesive bonded structural damage on vehicles, including:
    - adhesive application equipment
    - hand tool and securing clamps
- original equipment manufacturer (OEM) or authorised agency's recommended bonding procedures
- location and types of structural foams
- types of adhesives and their application methods and techniques
- removal and replacement techniques for bonded panels
- types of adhesive bonding methods
- securing techniques, including:
    - welding and bonding
    - rivet or screwing and bonding
- procedures for protecting vehicle and components when removing and replacing adhesive bonded panels
- procedures for final inspection of bonded structural repair.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to vehicle structural damage that they have repaired using adhesive bonding, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- workplace instructions
- OEM or authorised agency repair procedures
- PPE required to remove and replace adhesive bonded panels and structures
- SDS for adhesives
- vehicle specifications
- two different vehicles or frames with bonded panels requiring repair
- adhesives
- cleaning agents and materials
- tools, equipment and materials appropriate for repairing adhesive bonded panels.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN126 Repair vehicle aluminium body panels without the use of body filler

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to repair vehicle aluminium body panels without the use of body filler. This unit involves preparing for the task, selecting and using specialist aluminium repair tools and equipment, including tungsten inert gas (TIG) and metal inert gas (MIG) welding equipment, repairing vehicle aluminium body panels, finishing repair to pre-paint condition, and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair aluminium body panels	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret original equipment manufacturer (OEM) specifications and workplace procedures 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check aluminium repair materials, tools and equipment for serviceability 1.5 Plan work to identify aluminium repair methods, minimise waste, and use time efficiently
2. Carry out repair and	2.1 Identify, remove, strip and prepare aluminium panel to be

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ELEMENTS	PERFORMANCE CRITERIA
heat shrinking activities	repaired for repair according to workplace procedures 2.2 Select tools and equipment to prevent cross-contamination 2.3 Source and test aluminium welding equipment for operation 2.4 Use oxyacetylene plant to anneal and heat shrink stretched panel section as required 2.5 Finish aluminium panel repair to pre-paint condition without the use of body filler using planishing and file finishing techniques, and according to OEM or authorised agency's approved methods, workplace instructions, and safety and environmental requirements
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses measuring equipment.
Oral communication	• Clarifies instructions and procedures • Discusses work that could potentially disturb trim or electrical, mechanical or air conditioning systems • Reports quality issues and job outcomes clearly.
Problem solving	• Identifies quality issues and potential problems associated with repairing aluminium body panels.
Technology	• Uses specialist tools and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTN026 Repair vehicle aluminium body panels without the use of body filler.

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Links

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Assessment Requirements for AURVTN126 Repair vehicle aluminium body panels without the use of body filler

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- repair and finish at least two different vehicle aluminium body panels to pre-paint condition without the use of body filler, including:
  - at least one panel with damage of a minimum size of 300 mm x 50 mm
  - at least one panel with a split of 150 mm.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to repair vehicle aluminium body panels without the use of body filler, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to repair vehicle aluminium body panels without the use of body filler, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to repairing vehicle aluminium body panels without the use of body filler, including procedures for:

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    - selecting and using personal protective equipment (PPE)
    - manually handling vehicle panels
    - using tools and equipment, including tungsten inert gas (TIG) and metal inert gas (MIG) welding equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- tools and equipment relating to repairing vehicle aluminium body panels without the use of body filler, including:
    - personal protective equipment (PPE)
    - aluminium specific:
        - hammers
        - hand dollies
        - sanders
        - hand tools and equipment
        - TIG and MIG welding equipment.
- original equipment manufacturer (OEM) or authorised agency repair technical information
- different types of aluminium materials and their characteristics
- types and use of aluminium-specific repair tools and materials to prevent cross-contamination
- aluminium repair and finishing methods and techniques, including:
    - aluminium welding processes and techniques
    - pre-paint panel finish
- procedures for final inspection of repaired aluminium body panels.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the aluminium body panels that they have repaired without the use of body filler, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions detailing job requirements
- OEM or authorised agency repair specifications
- PPE required to repair aluminium body panels
- approved aluminium TIG and MIG welding equipment

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- two different damaged vehicle aluminium body panels requiring repair and finishing without the use of body filler to pre-paint quality standard
- tools, equipment and materials appropriate for repairing vehicle aluminium body panels without the use of body filler.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN127 Repair vehicle aluminium body panels using filler

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to follow body filler procedures in order to repair vehicle aluminium body panels. This unit involves preparing for the task, selecting and using specialist tools and equipment, cleaning panel surfaces, identifying suitable body filler type, calculating body filler amount, mixing and applying body filler to aluminium panels, completing repairs to pre-paint condition, and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair aluminium body panels using filler	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret original equipment manufacturer (OEM) specifications and workplace procedures 1.3 Select and check body filler and materials for repair for quality and identify and interpret body filler safety data sheets (SDS) 1.4 Identify hazards associated with the work and manage risks 1.5 Select and check aluminium repair tools and equipment for serviceability

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ELEMENTS	PERFORMANCE CRITERIA
	1.6 Plan work to identify aluminium repair methods, minimise waste, and use time efficiently
2. Carry out repairs using filler	2.1 Identify aluminium body panels to be repaired according to workplace instructions 2.2 Repair panels to pre-filler condition following OEM or approved agency repair procedures, tools and equipment 2.3 Mix filler according to manufacturer specifications 2.4 Apply filler to repair panels using approved body filler instructions and equipment according to workplace procedures, and safety and environmental requirements 2.5 Complete filler repairs to pre-paint condition following safety and environmental requirements 2.6 Check repairs according to workplace quality standards
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition, subtraction, multiplication and division, to calculate body filler quantities and mix required ratios.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Problem solving	• Identifies quality issues and potential problems associated with repairing aluminium body panels.
Technology	• Uses specialist tools and equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURVTN027 Repair vehicle aluminium body panels using filler.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN127 Repair vehicle aluminium body panels using filler

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- repair at least three different aluminium body panels on a vehicle to pre-paint condition using body filler, including at least one repair to an aluminium body panel dent of a minimum of 200 mm x 200 mm to a maximum filler depth of 3 mm.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to repair vehicle aluminium body panels using filler, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to repair vehicle aluminium body panels using filler, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to repairing vehicle aluminium body panels using filler, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for body filler

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    - manually handling vehicle panels
    - using tools and equipment, including dust and fume collection equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- tools and equipment relating to repairing vehicle aluminium body panels using filler, including:
    - personal protective equipment (PPE)
    - aluminium specific:
        - hammers
        - hand dollies
        - sanders
        - hand tools and equipment
    - aluminium approved body filler
- body filler specifications, including two-pack polyester
- body filler types, characteristics and application methods
- body filler repair procedures, methods and techniques, including:
    - surface area preparation
    - use of specialist tools and equipment
    - correct storage to prevent contamination
    - pre-paint panel finish
- procedures for final inspection of completed repairs on vehicle aluminium body panels using filler.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the aluminium body panel that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- body filler application specifications
- SDS for body filler
- PPE required to repair aluminium body panel using filler
- body filler materials relevant to repair of vehicle aluminium body panels
- three different aluminium body panels or vehicles requiring filler repairs

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- tools, equipment and materials appropriate for repairing aluminium body panels using filler.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTN128 Identify and repair high strength steel vehicle components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the knowledge and skills required to locate, identify and repair high strength steel (HSS) vehicle components, including advanced and ultra-high strength steel. This unit involves preparing for the task, selecting and using specialist tools and equipment, confirming recommended repair procedure from original equipment manufacturer (OEM) or authorised agency. It also includes selecting repair procedures and recommended welding method, removing and replacing HSS components, finishing HSS repairs to pre-paint condition, and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Locate OEM or authorised agency repair procedures	1.1 Determine job requirements from workplace instructions 1.2 Source, interpret and incorporate OEM or authorised agency repair procedures into planning process 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check required repair tools and equipment and personal protective equipment (PPE) for serviceability 1.5 Plan work to identify required HSS repair methods, minimise

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ELEMENTS	PERFORMANCE CRITERIA
	waste, and use time efficiently
2. Repair or replace HSS components	2.1 Protect sections not subject to repair, using approved methods and equipment 2.2 Identify and remove HSS sections to be replaced using OEM or authorised agency required removal methods and equipment, workplace procedures, and safety and environmental requirements 2.3 Restore damaged surfaces to a condition suitable for fitting replacement HSS components 2.4 Use vehicle measuring or jigging equipment to position replacement HSS component according to OEM or authorised agency specifications 2.5 Protect or reapply OEM or authorised agency's surface coatings 2.6 Align and secure replacement HSS components within OEM or authorised agency's tolerances
3. Weld HSS components	3.1 Locate and check recommended welding equipment for HSS for operation 3.2 Conduct sample welds using recommended repair methods, and inspect and destruction test for defects according to workplace instruction 3.3 Refit HSS components using recommended repair methods, materials and equipment, and without causing damage to other systems or components 3.4 Follow grinding procedures according to OEM or authorised agency and weld material specifications
4. Complete work processes	4.1 Finish repairs to HSS components to pre-paint condition according to workplace and OEM or authorised agency repair procedures 4.2 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.3 Clear work area and dispose of or recycle materials according to workplace procedures 4.4 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Sets approved measuring equipment and measures • Uses basic mathematical operations, including addition and subtraction, to calculate measurements and tolerances.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Problem solving	• Identifies defects, quality issues and potential problems associated with repairs to HSS components.
Technology	• Uses specialist equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTN028 Identify and repair high strength steel vehicle components.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN128 Identify and repair high strength steel vehicle components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and repair high strength steel (HSS) components to pre-paint condition on at least three different damaged vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to identify and repair high strength steel vehicle components, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to identify and repair high strength steel vehicle components, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to identifying and repairing HSS vehicle components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling vehicle components

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    - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- original equipment manufacturer (OEM) or authorised agency's:
    - vehicle specifications and measurements
    - approved repair procedures and quality processes, including:
        - identifying HSS type and location
        - visual and physical testing procedures
        - repair and welding specifications
- HSS repair, replacement and welding methods and procedures, including:
    - HSS recommended tools and equipment, including welding equipment
    - types and location of HSS components
    - pre-repair destruction testing of welds on similar material
    - body and panel alignment
    - bonding, riveting and welding
- procedures for protecting vehicle and components during repair work
- procedures for final inspection of HSS repair.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the damaged HSS vehicle components that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- OEM or authorised agency's approved specifications and recommended repair procedures
- OEM or authorised agency's approved welding equipment
- PPE required to repair HSS components
- three different damaged vehicles requiring HSS component repairs
- tools, equipment and materials appropriate for identifying and repairing HSS vehicle components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTN132 Inspect vehicle damage and determine repair procedures

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to inspect a vehicle for damage and determine suitable repair procedures. This unit involves preparing for the task, selecting and using measuring equipment, inspecting damage, determining repair requirements, and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to inspect vehicle damage	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret vehicle specifications and repair procedures from original equipment manufacturer (OEM) or authorised agency 1.3 Identify hazards associated with the work and manage risks 1.4 Locate, check and confirm vehicle to be inspected against vehicle information in workplace instructions 1.5 Analyse inspection methods, and select required option for vehicle and job requirement 1.6 Source and prepare materials and equipment required to

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ELEMENTS	PERFORMANCE CRITERIA
	conduct inspection
2. Inspect vehicle damage	2.1 Inspect vehicle to determine location and extent of direct and indirect damage according to OEM or authorised agency's recommended procedures, workplace procedures and safety requirements 2.2 Take measurements and record inspection findings according to workplace procedures 2.3 Complete vehicle inspection without causing damage to vehicle or components
3. Complete repair report	3.1 Prepare vehicle inspection report and repair plan and give to required personnel according to workplace procedures 3.2 Identify direct and indirect damage to vehicle clearly in report, based on workplace and OEM or authorised agency's recommended repair procedures 3.3 Check report for accuracy and completeness and finalise for submission to insurance company and/or customer according to workplace procedures 3.4 Provide responses to queries about the damage inspection and repair report when requested

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Interprets and calculates OEM or authorised agency repair and vehicle specifications using metric and imperial systems of measurement • Compares measurements and identifies non-conformance measurements • Uses basic mathematical operations, including addition, subtraction, multiplication and division to calculate material for repairs in damage inspection report • Calculates recommended remove and replacement times in damage inspection report.
Oral communication	• Clarifies instructions and procedures.

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SKILL	DESCRIPTION
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses digital camera to complete reporting tasks.

Unit Mapping Information

Supersedes and is equivalent to AURVTN032 Inspect vehicle damage and determine repair procedures.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN132 Inspect vehicle damage and determine repair procedures

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- inspect at least three different damaged vehicles and legibly prepare damage inspection reports and recommended repair plans for each.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to inspect vehicle damage and determine repair procedures, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to inspect vehicle damage and determine repair procedures, including:
  - establishing serviceability of tools and equipment
  - documentation procedures, including:
    - photographs
- work health and safety (WHS) requirements relating to inspecting vehicle damage and determining repair procedures, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using measuring equipment
- original equipment manufacturer (OEM) or authorised agency’s vehicle specifications and repair procedures
- types and application of vehicle inspection methods, including:
  - visual checking
  - physical checking, including:
    - taking measurements

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    - partial dismantling
  - referencing OEM or authorised agency's specifications
- procedures to determine indirect damage
- reporting requirements, including:
  - material list
  - estimation of time required to complete repairs.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the damaged vehicles that they have inspected, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- OEM or authorised agency's vehicle specifications and repair procedures
- three different damaged vehicles requiring inspection
- tools, equipment and materials appropriate for inspecting vehicle damage and determining repair procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTN133 Service and repair air compressors and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to test, service and repair air compressors and associated components. This unit involves preparing for the task, cleaning and replacing filters, making adjustments and necessary repairs according to workplace instructions, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The compressors are for workshop air supply, drilling rigs or mobile compressors. This unit is not for air brake compressors on heavy vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to service and repair air compressor and components	1.1 Determine job requirements from workplace instructions 1.2 Source and interpret service and repair procedures and information 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools, equipment and materials for serviceability
2. Determine service and repair requirements	2.1 Inspect and test air compressor and components according to manufacturer specifications, workplace procedures, and safety and environmental requirements

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Report inspection findings according to workplace procedures
3. Service and repair air compressor and components	3.1 Analyse service and repair options and select those required for the circumstances 3.2 Carry out service, repair, and component replacement and adjustment, according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.3 Carry out post-repair testing according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Measures air compressor system components and uses basic mathematical operations, including addition and subtraction • Calculates deviations and tolerances from manufacturer specifications.
Oral communication	• Clarifies workplace instructions and determine job requirements • Obtains information from customers and supervisors.
Reading	• Interprets information from manufacturer and workshop literature when seeking air compressor system specifications and procedures.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURVTN033 Service and repair air compressors and components.

Links

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Assessment Requirements for AURVTN133 Service and repair air compressors and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- service and repair at least two different air compressors, in which the work must involve the following components:
  - air compressor motor
  - air compressor tank
  - drive system
  - pressure regulator
  - water trap and filters
  - air lines and fittings.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to service and repair air compressors and components, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to service and repair air compressors and components, including:
  - establishing serviceability of tools and equipment
  - documentation and reporting procedures, including:
    - recommendations for required service, repair, replacement or adjustment
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to servicing and repairing air compressors and components, including procedures for:
    - selecting and using personal protective equipment (PPE)
    - working with compressed air
    - working with rotating shafts, belts and pulleys
- environmental requirements, including procedures for trapping, storing and disposing of air compressor fluids released during service and repair process
- types of air compressors and principles of operation, including:
    - reciprocating compressors
    - rotary screw compressors
    - vane
    - diaphragm
    - single and two-stage compressors
- identification, function and operation of air compressor system components, including:
    - air compressor motor
    - air compressor tank
    - drive system
    - pressure regulator
    - water trap and filters
    - air lines and fittings
- types and applications of compressor lubricants
- procedures for final inspection and adjustment of air compressors and components, including:
    - compressor cut-out pressure
    - minimising unintended air loss
    - automatic timing switch adjustment.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air compressors that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive workplace or simulated workplace
- workplace instructions
- manufacturer air compressor specifications
- two different operating air compressors and components as specified in the performance evidence requiring service and repair
- tools, equipment and materials appropriate for servicing and repairing air compressors and components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTN134 Evaluate vehicle body repair materials, equipment and work processes

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to research and evaluate vehicle body repair materials, equipment and work processes, and to select those most appropriate for establishing a new body repair facility or updating an existing business. This unit requires knowledge of original equipment manufacturer (OEM) repair requirements and evolving industry technologies.

The unit applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine process requirements	1.1 Identify requirements for body repair facility 1.2 Develop framework and rating system to facilitate comparisons of materials, equipment and processes 1.3 Identify and assess OEM repair requirements to establish comparisons and benchmarks to be used
2. Identify specifications for required body repair materials, equipment and work	2.1 Identify repair steps and work processes and produce flow charts 2.2 Identify material and equipment specifications to match repair processes

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ELEMENTS	PERFORMANCE CRITERIA
processes	2.3 Consult staff and management to identify additional or altered requirements 2.4 Identify materials, tooling and equipment requirements for body work undertaken in facility and document specifications 2.5 Identify work health and safety (WHS) requirements for safe facility and work practices 2.6 Compile and document required specification data
3. Evaluate materials, equipment and work processes against facility requirements	3.1 Identify and document material options against required quality, finish and conformity to OEM specifications and repair standards 3.2 Identify and document equipment options 3.3 Select materials and equipment based on facility work processes and comparisons of performance, cost and specifications compared to established rating system 3.4 Document outcomes and prepare report

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition and subtraction, to calculate material and data specifications.
Oral communication	• Clarifies instructions and procedures.
Planning and organising	• Identifies and evaluates material, equipment and work process options.
Technology	• Uses the full scope of available workplace technology relating to body work materials and equipment for analysis and evaluation.

Unit Mapping Information

Supersedes and is equivalent to AURVTN034 Evaluate vehicle body repair materials, equipment and work processes.

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Assessment Requirements for AURVTN134 Evaluate vehicle body repair materials, equipment and work processes

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- locate, interpret, evaluate and select materials, equipment and processes suitable for establishing or updating one automotive body repair facility, which must involve consultation with staff
- provide a report on above research, which includes an analysis of:
  - required and available materials and equipment with respect to facility work processes, specifications and standards
  - innovations applying to required materials and equipment
  - equipment capabilities and availability
  - cost-benefit analysis of materials, equipment and processes
  - impact of selected materials, equipment and processes on the environment and workplace safety.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to evaluate vehicle body repair materials, equipment and work processes, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to evaluate vehicle body repair materials, equipment and work processes, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- industry sector developments and trends in bodywork repair materials and equipment
- workplace policies and plans, including forecast systems and products
- body repair processes from original equipment manufacturer (OEM) or authorised agency's specifications
- materials, equipment and processes, including:
    - personal protective equipment (PPE) requirements
    - equipment capabilities
    - costings.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle body repair materials, equipment and work processes that they have evaluated, e.g. cost-benefit analysis.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or simulated workplace
- bodywork technology information
- tools, equipment and materials appropriate for evaluating vehicle body repair materials, equipment and work processes.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTN135 Apply original equipment manufacturer repair procedures during vehicle repairs

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to locate and apply original equipment manufacturer (OEM) or authorised agency recommended repair procedures during vehicle or component repair work. This unit involves preparing for the task, inspecting the vehicle damage, and identifying repair requirements according to OEM or authorised agency's specifications, developing a repair plan, and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Review OEM procedures	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for repair activity 1.3 Identify and confirm relevant procedures and vehicle specifications 1.4 Plan repair work to minimise waste and use time efficiently 1.5 Analyse OEM or authorised agency repair processes and incorporate into planning process
2. Apply knowledge of	2.1 Identify hazards associated with the work, assess potential

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ELEMENTS	PERFORMANCE CRITERIA
OEM standards	risks and implement control measures in line with workplace policies and procedures 2.2 Locate vehicle and components and prepare for repair work 2.3 Identify tools, materials, and equipment required for repair activity and establish serviceability in line with OEM or authorised agency requirements 2.4 Carry out repair work according workplace and OEM or authorised agency's recommended repair procedures and safety and environmental requirements 2.5 Identify non-compliances against OEM or authorised agency specifications, and report to appropriate personnel for rectification according to workplace procedures
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Clearly reports quality issues, non-conformances and job outcomes.
Numeracy	• Uses basic mathematical operations, including addition and subtraction • Calculates OEM or authorised agency repair measurements, including identify non-conformance measurements.
Planning and organising	• Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.

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SKILL	DESCRIPTION
Problem solving	• Identifies potential or actual hazards and takes action to minimise risk • Identifies non-conformances and quality issues associated with repairs • Refers problems outside area of responsibility to appropriate person and suggest possible causes.
Technology	• Uses specialist repair tools and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTN035 Apply original equipment manufacturer repair procedures during vehicle repairs.

Links

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Assessment Requirements for AURVTN135 Apply original equipment manufacturer repair procedures during vehicle repairs

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- apply original equipment manufacturer (OEM) or authorised agency repair procedures to at least three different damaged vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to apply OEM manufacturer repair procedures during vehicle repairs, including:
  - OEM or authorised agency's vehicle specifications and repair procedures, including compliance requirements
- workplace procedures required to apply OEM manufacturer repair procedures during vehicle repairs including:
  - procedures for protecting vehicle and components
  - procedures for final inspection of OEM repair procedures
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to applying OEM repair procedures during vehicle repairs, including procedures for:
  - selecting and using personal protective equipment (PPE)

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  - manually handling vehicle components
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the OEM or authorised agency repair procedures they have applied when repairing a vehicle, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- OEM or authorised agency repair procedures
- vehicle specifications
- three different damaged vehicles
- PPE requirements
- internet access
- tools, equipment and materials appropriate for applying OEM repair procedures during vehicle repairs.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTN137 Test vehicle components for correct operation

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to test vehicle components to assess their suitability for future use. This unit involves preparing for the task, selecting and using tools and equipment, removing, cleaning and testing vehicle components for correct operation, and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to test components	1.1 Determine job requirements and units and components to be tested from workplace instructions 1.2 Source and interpret task information 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools and equipment for safe and required operation 1.5 Plan work to identify disassembly and testing methods, minimise waste, and use time efficiently
2. Disassemble components	2.1 Disassemble components according to workplace procedures, manufacturer specifications, and safety and environmental requirements

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Check disassembled components for damage or wear against manufacturer specifications
3. Clean components	3.1 Determine cleaning procedure from manufacturer specifications, safety data sheets (SDS), and workplace procedures 3.2 Clean components using approved cleaning products, materials and equipment according to safety and environmental requirements
4. Test components	4.1 Test component to determine required operation and quality standard 4.2 Determine repair or replacement of component according to test results and workplace procedures
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Identifies and interprets component part numbers • Interprets manufacturer specifications and calculates tolerances and non-conformance from tests undertaken.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Problem solving	• Identifies non-conformance and quality issues after dismantling and testing vehicle components.

Unit Mapping Information

Supersedes and is equivalent to AURVTN037 Test vehicle components for correct operation.

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Assessment Requirements for AURVTN137 Test vehicle components for correct operation

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- disassemble, clean and test the following components:
  - at least three different vehicle mechanical components
  - at least three different vehicle electrical components, including at least one head light assembly.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to test vehicle components for correct operation, including:
  - information provided by customer and supervisors
  - manufacturer component specifications and procedures or equivalent documentation
  - cleaning agent safety data sheets (SDS)
- workplace procedures required to test vehicle components for correct operation, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to testing vehicle components for correct operation, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for cleaning agents
  - handling and storing vehicle components
  - using tools and equipment
  - using chemicals and cleaning agents
- environmental requirements, including procedures for trapping, storing and disposing of chemicals, cleaning agents and waste materials
- location and content of service and repair manuals
- component checking and testing methods and techniques, including:
  - component disassembly and reassembly
  - cleaning methods
- procedures for final inspection of vehicle component operation.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle units and components that they have tested, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- vehicle service and repair manuals
- PPE required to remove and test vehicle components
- SDS for cleaning agents
- cleaning agents
- vehicle components that require testing for correct operation, including:
  - three different vehicle mechanical components
  - three different vehicle electrical components, including head light assembly
- tools, equipment and materials appropriate for testing vehicle components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTN138 Carry out basic repairs to vehicle body panels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to carry out basic repairs to vehicle body panels. This unit involves planning and preparing for the task, identifying and using abrasives, body fillers, and heat shrink and metal finishing procedures, selecting and using tools and equipment, and maintaining the work area, tools and equipment.

The unit applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair body panel	1.1 Interpret task instructions and identify vehicle body panel to be worked on 1.2 Source and interpret manufacturer specifications and workplace procedures for repairing body panel 1.3 Source and interpret safety and environmental requirements 1.4 Identify and report potential hazards and risks associated with task to workplace supervisor 1.5 Identify and check tools and equipment required for repairing

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ELEMENTS	PERFORMANCE CRITERIA
	body panel for serviceability
2. Carry out basic panel repairs	2.1 Shape damaged panel using basic panel beating techniques according to workplace instructions and safety and environmental requirements, and without causing damage to components, tools or equipment 2.2 Carry out body filling and metal finishing according to workplace procedures and safety and environmental requirements 2.3 Complete panel repair to pre-paint condition according to workplace instructions and procedures, and safety and environmental requirements
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances.
Oral communication	• Participates effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Reading	• Selects and interprets key information from: • manufacturer literature, safety requirements and workplace procedures for repairing a body panel • Environmental requirements and workplace procedures to ensure a clean and safe work site.

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Unit Mapping Information

Supersedes and is equivalent to AURVTN039 Carry out basic repairs to vehicle body panels.

Links

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Assessment Requirements for AURVTN138 Carry out basic repairs to vehicle body panels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out basic repairs on at least two different vehicle body panels, including:
  - at least one vehicle mud guard
  - at least one vehicle door.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out basic repairs to vehicle body panels, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to carry out basic repairs to vehicle body panels, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to carrying out basic repairs to vehicle body panels, including procedures for:

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  - selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear
  - using hand tools
- environmental requirements, including procedures for trapping, storing and disposing of waste produced during body panel repair processes
- types and construction of vehicle body panels
- body panel repair procedures, including:
  - basic panel beating
  - types and application of body fillers
  - basic body filler repair.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the body panels that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE for carrying out panel repairs
- one vehicle mud guard
- one vehicle door
- tools, equipment and materials appropriate for repairing body panels.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTN140 Repair vehicle plastic components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to carry out basic repairs to vehicle plastic components. This unit involves planning and preparing for the task, identifying types of automotive plastic components, selecting and using tools and equipment, welding plastic components, and maintaining the work area, tools and equipment.

The unit applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical -Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair plastic component	1.1 Interpret task instructions and identify plastic component to be worked on 1.2 Source and interpret manufacturer specifications and workplace procedures for repairing component 1.3 Source and interpret safety and environmental requirements 1.4 Identify and report potential hazards and risks associated with task to workplace supervisor 1.5 Identify tools and equipment required for repairing component

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ELEMENTS	PERFORMANCE CRITERIA
	and check for serviceability
2. Repair plastic component	2.1 Select and use required plastic welding techniques and adhesives to repair component according to workplace requirements and procedures, and safety and environmental requirements 2.2 Select and apply body filler to the component according to workplace requirements, and safety and environmental requirements 2.3 Complete repairs to pre-paint condition according to workplace requirements and procedures, and safety and environmental requirements 2.4 Inspect repaired component according to workplace requirements 2.5 Record component inspection results
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition, subtraction, multiplication and division, to calculate volumes.
Oral communication	• Participates effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.

Reading	• Selects and interprets key information from:
	  • manufacturer literature, safety requirements and workplace procedures for repairing plastic components
	  • environmental requirements and workplace procedures to ensure a clean and safe work site.

Technology	• Sets up and operates specialised equipment and tools.

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Unit Mapping Information

Supersedes and is equivalent to AURVTN040 Repair vehicle plastic components.

Links

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Assessment Requirements for AURVTN140 Repair vehicle plastic components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- repair at least two different vehicle plastic components, in which the work must involve:
  - at least one plastic welding repair
  - at least one plastic filling repair.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to repair vehicle plastic components, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to repair vehicle plastic components, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to repairing vehicle plastic components, including procedures for:
  - selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear

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  - using hand tools
- environmental requirements, including procedures for trapping, storing and disposing of waste produced during repair processes
- types and construction of vehicle plastic components
- plastic component repair procedures, including:
  - plastic welding
  - types and application of body fillers
  - types and application of adhesives
  - repair finish standard.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the plastic components that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE for repairing vehicle plastic components
- two different vehicle plastic components requiring repair
- tools, equipment and materials appropriate for repairing vehicle plastic components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN143 Identify and repair high strength aluminium components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to locate, identify and repair high strength aluminium (HSA) vehicle components, including advanced and ultra-high strength aluminium. This unit involves preparing for the task, selecting and using specialist tools and equipment and confirming recommended repair procedure from original equipment manufacturer (OEM) or authorised agency. It also involves selecting repair procedures and recommended welding method, removing and replacing HSA components, finishing HSA repairs to pre-paint condition, and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Body

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Locate OEM or authorised agency repair procedures	1.1 Determine job requirements from workplace instructions 1.2 Source, interpret and incorporate OEM or authorised agency repair procedures into planning process 1.3 Identify and manage hazards associated with the work 1.4 Select authorised repair tools, equipment and personal protective equipment (PPE) and check for serviceability 1.5 Identify and plan work to required HSA repair methods to

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ELEMENTS	PERFORMANCE CRITERIA
	minimise waste and use time efficiently
2. Repair or replace HSA components	2.1 Protect sections not subject to repair, using approved methods and equipment 2.2 Identify HSA sections to be replaced and remove using OEM or authorised agency recommended removal methods and equipment, workplace procedures, and safety and environmental requirements 2.3 Restore damaged surfaces to a condition required for fitting replacement HSA components 2.4 Position vehicle measuring, or jigging equipment used in the replacement of HSA component according to OEM or authorised agency specifications 2.5 Protect or reapply OEM or authorised agency's surface coatings 2.6 Align and secure replacement HSA components within OEM or authorised agency's tolerances
3. Weld HSA components	3.1 Locate and check recommended welding equipment for HSA for correct operation according to OEM procedures 3.2 Conduct sample welds using recommended welding techniques, and perform inspection and destruction tests for defects according to workplace instructions 3.3 Refit HSA components using recommended repair methods, materials and equipment, and without causing damage to other systems or components 3.4 Follow grinding and drilling procedures according to OEM or authorised agency and weld material specifications
4. Complete work processes	4.1 Finish repairs to HSA components to pre-paint condition according to workplace and OEM or authorised agency repair procedures 4.2 Perform final inspection to ensure work meets workplace expectations and manufacturer specifications, and components are presented ready for painting 4.3 Clean work area, dispose of waste and non-recyclable materials, and collect and store recyclable material 4.4 Check tools and equipment, tag any faults, and store according to workplace procedures 4.5 Process workplace documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Sets and uses measuring equipment • Uses basic mathematical operations, including addition and subtraction, to calculate measurements and tolerances.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Problem solving	• Identifies defects, quality issues and potential problems associated with repairs to HSA components.
Technology	• Uses specialist equipment.

Unit Mapping Information

New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN143 Identify and repair high strength aluminium components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and repair high strength aluminium (HSA) components to pre-paint condition on at least three different damaged vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to identify and repair high strength aluminium components, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to identify and repair high strength aluminium components, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to identifying and repairing HSA vehicle components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling vehicle components

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    - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- original equipment manufacturer (OEM) or authorised agency's:
    - vehicle specifications and measurements
    - approved repair procedures and quality processes
- HSA repair, replacement and welding methods and procedures, including:
    - HSA recommended tools and equipment, including welding equipment
    - types and location of HSA components
    - pre-repair destruction testing of welds on similar material
    - body and panel alignment
    - bonding, riveting and welding
- procedures for protecting vehicle and components during repair work
- procedures for final inspection of HSA repair.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the damaged HSA vehicle components that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- OEM or authorised agency's approved specifications and recommended repair procedures
- OEM or authorised agency's approved welding equipment
- PPE required to repair HSA components
- three different damaged vehicles requiring HSA component repairs
- tools, equipment and materials appropriate for identifying and repairing HSA vehicle components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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Links

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AURVTP101 Remove paint from vehicle painted surfaces

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to remove paint from vehicle painted surfaces using a variety of industry-approved methods and without causing damage to vehicle and components. This unit involves preparing for the task, selecting and using specialist tools, equipment and chemicals to remove paint from metal and plastic component surfaces in preparation for repairs or refinishing, and completing workplace processes and documentation.

The unit applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to remove paint from vehicle surface	1.1 Identify job requirements from workplace instructions 1.2 Assess paint removal methods and their effect on components according to workplace procedures and customer requirements 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace

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ELEMENTS	PERFORMANCE CRITERIA
	procedures
2. Remove paint	2.1 Identify and prepare vehicle metal and plastic components requiring paint removal 2.2 Remove vehicle paint according to workplace and manufacturer procedures, workplace health and safety and environmental requirements
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and paint technical data sheets (TDS) and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Clearly reports quality issues and job outcomes.
Numeracy	• Uses basic mathematical operations, including addition and subtraction • Calculates quantities of required materials.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist tools and equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURVTP001 Remove paint from vehicle painted surfaces.

Links

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Assessment Requirements for AURVTP101 Remove paint from vehicle painted surfaces

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- remove paint from vehicle surfaces using chemical and sanding techniques on:
  - at least three different plastic vehicle body components
  - at least three different metal vehicle body components.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to remove paint from vehicle painted surfaces, including:
  - safety data sheets (SDS) relating to paint removal chemicals
  - manufacturer's specifications or equivalent documentation
- workplace procedures required to remove paint from vehicle painted surfaces including:
  - paint removal procedures
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
- workplace health and safety (WHS) requirements relating to removing paint from vehicle painted surfaces, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for paint removing chemicals

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  - handling and storing paint removing chemicals
  - using tools and equipment
  - using fume and dust collection equipment, including positive air feed masks
- environmental requirements relating to removing paint from vehicle painted surfaces, including procedures for trapping, storing and disposing of waste materials and chemicals
- paint manufacturer and workplace paint removal methods, including:
  - chemical substance
  - abrasive blasting
  - machine sanding
  - hand sanding
- procedures for protecting vehicle and components during paint removal
- procedures for final cleaning and inspection of vehicle surfaces.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to paint removal work they have completed on vehicle body panels, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- paint manufacturer specifications
- PPE for paint removal, including fume and dust extraction equipment
- SDS for paint removing chemicals
- vehicle protection equipment
- chemicals to remove paint
- painted plastic and metal components as specified in the performance evidence requiring paint removal
- tools, equipment and materials appropriate for applying paint removal methods.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTP103 Prepare vehicle spray painting equipment for use

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to clean and maintain vehicle spray painting equipment. This unit involves preparing for the task, selecting and using cleaning materials and equipment, preparing spray painting equipment for vehicle refinishing activities, and completing workplace processes and documentation.

The unit applies to those working in the automotive refinishing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Set up spray painting equipment ready for use	2.1 Set up, test and maintain spray guns according to workplace and manufacturer procedures, workplace health and safety and environmental requirements 2.2 Set up paint mixing system and paint agitators and establish

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ELEMENTS	PERFORMANCE CRITERIA
	serviceability according to manufacturer specifications 2.3 Set up paint drying systems and inspect for correct operation according to workplace procedures 2.4 Check pressure regulators and air lines according to workplace procedures
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm equipment is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications and industry standards.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly
Numeracy	• Interprets air pressure gauge settings and spray booth drying time.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTP003 Prepare vehicle spray painting equipment for use.

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Links

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Assessment Requirements for AURVTP103 Prepare vehicle spray painting equipment for use

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare the following spray-painting equipment for at least two different vehicle spray painting tasks:
  - high volume low pressure (HVLP) spray guns
  - paint mixing system and paint agitators
  - positive air feed masks
  - gravity feed spray guns
  - spray and drying booths
  - suction feed spray guns
  - air pressure regulators
  - air compressors and air lines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to prepare vehicle spray painting equipment for use, including:
  - manufacturer’s specifications or equivalent documentation
- workplace procedures required to prepare vehicle spray painting equipment for use including:
  - paint equipment set-up
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment

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    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to preparing vehicle spray painting equipment for use, including procedures for:
    - selecting and using personal protective equipment (PPE)
    - using tools and equipment
- environmental requirements relating to preparing vehicle spray painting equipment for use, including procedures for trapping, storing and disposing of waste materials
- types and uses of spray-painting equipment, including:
    - spray gun use and associated equipment set-up and maintenance
    - correct use of positive air feed masks
    - filters and dryers
    - spray equipment cleaning methods and materials
    - paint mixing systems
    - paint pressure pot systems
    - spray and drying booths
    - paint mixing system and paint agitators
    - gravity feed spray guns
    - suction feed spray guns
    - high volume low pressure (HVLP) spray guns
    - pressure regulators
    - air compressors and air lines
- procedures for final inspection of vehicle spray painting equipment operation.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to vehicle spray painting equipment that they have prepared, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- equipment manufacturer specifications and operating procedures
- PPE to prepare spray painting materials and equipment

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- spray guns
- paint mixing systems
- drying equipment
- tools, equipment and materials appropriate for preparing vehicle spray painting equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTP104 Apply basic colour matching techniques using vehicle paint codes

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to colour match paints using original equipment manufacturer (OEM) paint codes. This unit involves preparing for the task, selecting and using specialist tools and equipment, preparing colour matching test cards, mixing and spraying paint and conducting a visual colour match, and completing workplace processes and documentation.

The unit applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to apply basic colour matching techniques	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Mix paint colour	2.1 Set up and check paint measuring system required for job according to workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Carry out colour mixing using methods, tools, equipment and materials, according to workplace procedures
3. Prepare colour test cards and perform visual matching	3.1 Prepare and spray test cards according to workplace procedures, OEM paint codes, workplace health and safety and environmental requirements 3.2 Carry out visual matching and make comparisons between matched and original paint, and record paint codes 3.3 Remix paint for further matching if mix does not match original paint
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly
Numeracy	• Interprets OEM paint codes and formulas • Uses basic mathematical operations, including addition, subtraction, multiplication and division • Determines ratios and calculate quantities of paint and materials.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist tools and equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURVTP004 Apply basic colour matching techniques using vehicle paint codes.

Links

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Assessment Requirements for AURVTP104 Apply basic colour matching techniques using vehicle paint codes

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- match solid colour paints on at least two different vehicle panels, in which the work must involve:
  - wet to wet matching
  - edge to edge matching
  - hard line matching.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to apply basic colour matching techniques using vehicle paint codes, including:
  - technical data sheets (TDS) and safety data sheets (SDS) relating to paint material
  - original equipment manufacturer (OEM) paint colour codes and formulas
  - vehicle paint code manuals
- workplace procedures required to apply basic colour matching techniques using vehicle paint codes including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to applying basic colour matching techniques using vehicle paint codes, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) and safety data sheets (SDS) for paint material
  - handling and storing paint and cleaning materials
  - using tools and equipment
- environmental requirements relating to applying basic colour matching techniques using vehicle paint codes, including procedures for trapping, storing and disposing of waste materials
- paint colour mixing techniques, including:
  - mixing system set-up and operation
  - paint application methods
  - correct use of positive air feed masks
- types and use of equipment and materials relating to paint colour matching, including:
  - spray gun set-up, use and maintenance
  - paint drying equipment and methods
  - pressure regulators
  - air compressors
  - heating and lighting systems
  - polishing and cleaning equipment
  - solid colour paints
  - paint thinners
  - paint reducers
  - cleaning materials
- colour matching techniques, including:
  - wet to wet matching
  - edge to edge matching
  - hard line matching
  - dabbing
- procedures for identifying vehicle paint condition, including paint fade
- procedures for protecting vehicle and components when applying paint
- procedures for final inspection of basic colour matching.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the paint colour matching techniques that they have applied, e.g. work orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- paint codes and formulas
- TDS and SDS for paint material
- two different vehicle panels requiring colour matching
- PPE needed for paint colour matching
- paint and colour matching materials
- paint mixing materials and system
- sample colours to be matched
- tools, equipment and materials appropriate for applying basic colour matching techniques using vehicle paint codes.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTP107 Touch up minor vehicle paintwork damage

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to prepare spray painting equipment and apply paint materials to minor vehicle paintwork damage. This unit involves preparing for the task, selecting and using specialist tools and equipment, mixing and matching paint and touching up painted surfaces to pre-damage condition, and completing workplace processes and documentation.

The unit applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to apply paint touch-ups	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret touch-up information 1.3 Select and inspect paint materials for quality 1.4 Identify hazards associated with the work and manage risks 1.5 Select and check tools and equipment for serviceability 1.6 Plan work to identify required paint touch-up techniques and methods, minimise waste, and use time efficiently
2. Apply touch-up paint	2.1 Clean and prepare surface area for touch-up paint using approved abrasive and cleaning materials 2.2 Prepare and match touch-up paint materials according to

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ELEMENTS	PERFORMANCE CRITERIA
	manufacturer specifications, workplace procedures, and safety and environmental requirements 2.3 Apply touch-up paint to scratched or damaged area using recommended tools and equipment and according to manufacturer specifications, workplace procedures, and safety and environmental requirements 2.4 Sand touch-up paint area using approved abrasives and polish 2.5 Apply glaze and sealant to touched up paint area
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition and subtraction, to calculate quantities and measure paint materials • Sets air pressure gauges.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Technology	• Uses specialist tools.

Unit Mapping Information

Supersedes and is equivalent to AURVTP007 Touch up minor vehicle paintwork damage.

Links

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Assessment Requirements for AURVTP107 Touch up minor vehicle paintwork damage

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- touch up the damaged paintwork on at least two different vehicles in which the work must include a different one of the following for each vehicle:
  - blending and clearing a vehicle panel
  - partially blending and fading out blend on a vehicle panel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to touch up minor vehicle paintwork damage, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - technical data sheets (TDS) and safety data sheets (SDS)
- workplace procedures required to touch up minor vehicle paintwork damage, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to touching up minor vehicle paintwork damage, including procedures for:

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    - selecting and using personal protective equipment (PPE)
    - using technical data sheets (TDS) and safety data sheets (SDS) for paint and cleaning materials
    - handling and storing paint and cleaning materials
    - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- paint manufacturer specifications
- types and features of paint materials, including:
    - primers
    - water-based paints
    - two-part enamels
    - hardeners
    - paint reducers
    - abrasives and polishes
    - glazes and sealants
- types and use of painting equipment, including:
    - types of spray guns and maintenance requirements
    - spray gun techniques
    - correct use of positive air feed masks
- paint touch-up techniques, including:
    - surface preparation methods
    - paint mixing procedures
    - paint application methods
    - paint drying methods and procedures
- procedures for protecting vehicle and components during paintwork touch-up
- procedures for final inspection of completed paint touch-up.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the damaged vehicle paintwork that they have touched up, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- TDS and SDS for paint and cleaning materials
- PPE to touch up paint
- paint materials required for paint touch-up
- two different vehicles or panels requiring paint touch-up
- tools, equipment and materials appropriate for applying paint touch-up techniques.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP109 Apply vehicle body film wrapping

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to prepare vehicle body surfaces and apply vinyl film wrapping materials. This unit involves preparing for the task, selecting and using specialist tools, selecting vinyl film materials, checking vinyl film quality, and completing workplace processes and documentation.

The unit applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to apply vehicle body film wrapping	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret workplace procedures and vinyl film supplier recommended application methods 1.3 Select and inspect vinyl film wrapping materials for quality 1.4 Identify hazards associated with the work and manage risks 1.5 Select and check tools and equipment for serviceability 1.6 Assess vehicle panel surface for quality 1.7 Plan work to apply body film wrapping, minimise waste, and prevent damage to vehicle
2. Measure, cut and apply	2.1 Measure surface area and produce patterns

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ELEMENTS	PERFORMANCE CRITERIA
vinyl film	2.2 Cut vinyl film material according to vinyl pattern specifications and safety and environmental requirements 2.3 Prepare body surface using vinyl film supplier approved methods, materials and equipment 2.4 Apply vinyl film wrapping materials according to vinyl film supplier specifications and workplace procedures, and without causing damage to body surface
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition, subtraction, multiplication and division to: • measure surface areas and vinyl film patterns • Calculates vinyl film wrapping material requirements.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Technology	• Uses specialist tools.

Unit Mapping Information

Supersedes and is equivalent to AURVTP009 Apply vehicle body film wrapping.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP109 Apply vehicle body film wrapping

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- apply vinyl film wrapping on at least three different vehicles.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to apply vehicle body film wrapping, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to apply vehicle body film wrapping, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to applying vehicle body film wrapping, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools
- environmental requirements, including procedures for trapping, storing and disposing of waste material

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- types and uses of vinyl film wrapping materials and tools, including:
  - vinyl film wrapping requirements
  - patterns
  - application tools
  - cleaning agents
- vinyl film supplier recommended methods and techniques for applying vinyl film wrapping, including:
  - surface preparation
  - surface measurements and pattern development
  - quality requirements relating to vinyl film wrapping
- procedures for protecting vehicle and components when applying film wrapping
- procedures for final inspection of vehicle vinyl film wrapping.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the body film wrapping they have applied to vehicles, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- PPE to apply vinyl film wrapping
- vinyl film supplier specifications and application methods
- three different vehicles requiring the application of vinyl film materials
- vinyl film wrapping material
- tools, equipment and materials appropriate for applying vehicle body film wrapping.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTP110 Prepare and operate vehicle paint drying equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to prepare paint drying equipment. This unit involves preparing for the task, selecting and using specialist tools and equipment, setting, operating and maintaining paint drying equipment to manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Set up paint drying equipment ready for operation	2.1 Set up paint drying equipment and check for correct operation, according to workplace procedures and manufacturer specifications 2.2 Organise vehicle protection materials according to

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ELEMENTS	PERFORMANCE CRITERIA
	workplace procedures 2.3 Set up and operate drying equipment according to workplace procedures, workplace health and safety and environmental requirements 2.4 Perform regularly scheduled checks, cleaning and maintenance on paint drying equipment according to manufacturer specifications
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and paint technical data sheets (TDS) and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Numeracy	• Interprets paint drying equipment temperature settings and drying times.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURVTP010 Prepare and operate vehicle paint drying equipment.

Links

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Assessment Requirements for AURVTP110 Prepare and operate vehicle paint drying equipment

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare, operate and maintain the following paint drying equipment during the course of painting at least three different vehicles:
  - spray booth
  - air movement system
  - infra-red (IR) equipment
  - ultraviolet (UV) curing system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to prepare and operate vehicle paint drying equipment, including:
  - paint drying equipment manufacturer operating instructions, including procedures for the set-up and maintenance of equipment
- workplace procedures required to prepare and operate vehicle paint drying equipment including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to preparing and operating vehicle paint drying equipment, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - handling and storing materials
  - using tools and equipment
- environmental requirements relating to preparing and operating vehicle paint drying equipment, including procedures for trapping, storing and disposing of waste materials
- paint drying methods
- types and uses of paint drying equipment including:
  - spray booth
  - air movement system
  - infra-red (IR) equipment
  - ultraviolet (UV) curing system.
- procedures for final inspection and testing of paint drying equipment.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle paint drying equipment that they have prepared and operated, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- equipment manufacturer operating instructions
- PPE to prepare and operate spray booths and paint drying equipment
- materials required to prepare and maintain paint drying equipment
- three different vehicles to be painted
- spray booth and paint drying equipment for the three different vehicles
- tools, equipment and materials appropriate for preparing and operating vehicle paint drying equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTP111 Apply solid acrylic two-pack materials to vehicle components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to apply solid acrylic two-pack materials to a variety of vehicle components by spray gun application. This unit involves preparing for the task, selecting and using specialist tools and equipment, mixing and applying automotive paint materials according to manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those working in the automotive refinishing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for refinishing activity and establish serviceability according to workplace procedures
2. Carry out application activities	2.1 Mix and apply two-pack materials according to workplace procedures, manufacturer specifications, industry standards

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ELEMENTS	PERFORMANCE CRITERIA
	and workplace health and safety and environmental requirements 2.2 Dry materials according to workplace procedures 2.3 Check paint finish against manufacturers specifications 2.4 Remove paint surface faults using compounds, polishes and glazes
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and paint technical data sheets (TDS) and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.

Numeracy	• Uses basic mathematical operations, including addition, subtraction, multiplication and division to:
	  • calculate quantities of required materials
	  • measure and determine ratios for mixing paint materials
	• Sets spraying and drying equipment.

Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURVTP011 Apply solid acrylic two-pack materials to vehicle components.

Links

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Assessment Requirements for AURVTP111 Apply solid acrylic two-pack materials to vehicle components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- apply solid acrylic two-pack materials to at least three different vehicles
- in the course of the above work, apply solid acrylic two-pack paint to:
  - two different vehicle panels
  - two different vehicle full sides
  - two different vehicle front ends or rear ends
- check the above paintwork and rectify paint surface faults as required.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to apply solid acrylic two-pack materials to vehicle components, including:
  - paint manufacturer’s specifications
- workplace procedures required to apply solid acrylic two-pack materials to vehicle components including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to applying solid acrylic two-pack materials to vehicle components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) and safety data sheets (SDS) for solid acrylic two-pack materials
  - handling and storing paint materials
  - using tools and equipment
  - using approved drying area
- environmental requirements relating to applying solid acrylic two-pack materials to vehicle components, including procedures for trapping, storing and disposing of waste materials
- types and use of solid acrylic two-pack paint materials
- types and use of spray guns, including:
  - spray gun operation and spraying techniques
  - spray gun cleaning and maintenance methods
- paint application methods and techniques, including:
  - drying methods for solid acrylic two-pack materials
  - paint surface fault identification and rectification procedures
  - correct use of positive air feed masks
- procedures for protecting vehicle and components when applying solid acrylic two-pack materials
- procedures for final inspection of solid acrylic two-pack painted surfaces, including:
  - checking colour, texture, depth and gloss
  - ensuring paint finish is contaminant-free
  - ensuring paint finish blends into surrounding surfaces.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the solid acrylic two-pack materials they have applied to vehicle components, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications
- TDS and SDS for solid acrylic two-pack materials

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- PPE required to apply solid acrylic two-pack materials
- solid acrylic two-pack paint materials
- three different vehicles with components specified in the performance evidence requiring spray painting using solid acrylic two-pack materials tools, equipment and materials appropriate for applying solid acrylic two-pack materials.
- tools, equipment and materials appropriate for applying solid acrylic two-pack materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTP112 Apply air dry and polyurethane refinishing materials

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to apply air dry and polyurethane refinishing materials to a variety of vehicle components by spray gun application. This unit involves preparing for the task, selecting and using specialist tools and equipment, mixing and applying automotive paint materials according to manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those working in the automotive refinishing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Carry out application activities	2.1 Mix and apply refinishing materials according to workplace procedures, manufacturer’s specifications, workplace health

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ELEMENTS	PERFORMANCE CRITERIA
	and safety and environmental requirements 2.2 Dry refinishing materials according to workplace procedures 2.3 Check paint finish against manufacturers specifications 2.4 Remove paint surface faults using compounds, polishes and glazes
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and paint technical data sheets (TDS) and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.

Numeracy	• Uses basic mathematical operations, including addition, subtraction, multiplication and division to:
	  • calculate quantities of required materials
	  • measure and determine ratios for mixing paint materials
	• Sets spraying and drying equipment.

Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURVTP012 Apply air dry and polyurethane enamel refinishing materials.

Links

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Assessment Requirements for AURVTP112 Apply air dry and polyurethane refinishing materials

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- apply air dry and polyurethane refinishing materials to at least two different vehicle body components, including:
  - at least one component using paint with additive
  - at least one component using paint without additive.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to apply air dry and polyurethane refinishing materials, including:
  - paint manufacturer’s specifications
- workplace procedures required to apply air dry and polyurethane refinishing materials including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to applying air dry and polyurethane refinishing materials, including procedures for:
  - selecting and using personal protective equipment (PPE)

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    - using technical data sheets (TDS) and safety data sheets (SDS) for polyurethane refinishing materials
    - handling and storing paint materials
    - using tools and equipment
    - using approved drying area
- environmental requirements relating to applying air dry and polyurethane refinishing materials, including procedures for trapping, storing and disposing of waste materials
- types and use of air dry and polyurethane refinishing materials, including:
    - air dry synthetic enamels
    - enamel additives
    - polyurethane enamels
    - paint reducers
- air dry and polyurethane refinishing material application methods and techniques, including:
    - spray and drying equipment
    - paint fault and rectification procedures
    - drying methods for air dry and polyurethane refinishing materials
    - correct use of positive air feed masks
- types and use of spray guns, including:
    - spray gun operation and spraying techniques
    - spray gun cleaning and maintenance methods
- procedures for protecting vehicle and components when applying paints
- procedures for final inspection of polyurethane refinished surface:
    - checking colour, texture, depth and gloss
    - ensuring paint finish is contaminant-free
    - ensuring paint finish blends into surrounding surfaces.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air dry and polyurethane refinishing materials they have applied to vehicle components, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications

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- TDS and SDS for air dry and polyurethane refinishing materials
- PPE required to apply air dry and polyurethane refinishing materials
- air dry and polyurethane refinishing materials
- two different vehicles requiring the application of air dry and polyurethane refinishing material
- tools, equipment and materials appropriate for applying air dry and polyurethane refinishing material.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTP113 Prepare vehicle substrates for refinishing

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to prepare vehicle substrates for refinishing by removing surface rust and scale and applying primers and sealers before the final refinishing. This unit involves preparing for the task, selecting and using specialist tools and equipment, selecting and using materials, cleaning vehicle substrate surfaces according to manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those working in the automotive refinishing industry. The preparation of plastic or composite materials for refinishing is not addressed in this unit.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Remove surface rust and apply primers	2.1 Remove surface rust and scale from substrate according to workplace procedures, manufacturer specifications and

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ELEMENTS	PERFORMANCE CRITERIA
	workplace health and safety and environmental requirements 2.2 Protect or remove substrate components affected by application processes according to workplace procedures 2.3 Clean surfaces to be painted and remove contaminants 2.4 Apply primers and primer surfaces according to workplace procedures
3. Prepare primed and sealed surface for refinishing	3.1 Prepare surfaces to be refinished according to workplace procedures 3.2 Record and report identified surface defects
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and paint technical data sheets (TDS) and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Numeracy	• Uses basic mathematical operations, including addition and subtraction, to calculate material quantities.
Planning and organising	• Plans own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology	• Uses specialist tools and equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURVTP013 Prepare vehicle substrates for refinishing.

Links

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Assessment Requirements for AURVTP113 Prepare vehicle substrates for refinishing

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare two different vehicle substrates for refinishing,
- during the course of the above work, prepare at least one of each of the following:
  - full steel vehicle body panel with surface rust
  - full aluminium vehicle body panel
  - stainless steel sheet measuring at least 150 mm x 150 mm or stainless-steel body moulding
  - galvanised coated sheet measuring at least 150 mm x 150 mm b
  - zinc anneal sheet measuring at least 150 mm x 150 mm.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to prepare vehicle substrates for refinishing, including:
  - manufacturer’s specifications or equivalent documentation
- workplace procedures required to prepare vehicle substrates for refinishing including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to preparing vehicle substrates for refinishing, including procedures for:
  - selecting and using personal protective equipment (PPE), including positive air feed masks
  - using technical data sheets (TDS) and safety data sheets (SDS) for primers and chemical cleaners
  - handling and storing paint materials
  - using tools and equipment
  - using approved drying areas
- environmental requirements relating to preparing vehicle substrates for refinishing, including procedures for trapping, storing and disposing of waste materials
- types and uses of materials, including:
  - chemical cleaners
  - body fillers
  - primer fillers
  - abrasive papers
  - cleaning materials
  - masking materials
  - primers and etch primers
- types and uses of tools and equipment, including:
  - primers and sealers
  - spray gun set-up, maintenance and application
  - cleaning agents
  - hand tools
  - air and power tools
  - cleaning equipment
  - spray equipment
  - paint measuring equipment
- surface preparation methods and techniques for primers, sealers and surface repair:
  - masking off areas not to be coated
  - adhesion tests
  - primer mixing techniques
  - application methods for primers, fillers and sealers
  - sanding and blocking
  - feather edging procedures
- procedures for protecting vehicle and components when preparing substrates
- procedures for final inspection of prepared substrates.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle substrates that they have prepared for refinishing, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- TDS and SDS for primers and chemical cleaners
- PPE required to prepare substrates for refinishing
- materials required to prepare substrates for refinishing
- vehicle substrates specified in the performance evidence requiring preparation for refinishing
- tools, equipment and materials appropriate for preparing vehicle substrates for refinishing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP114 Colour match multi-layer and clear over base two-pack paints on vehicles and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to match vehicle or component multi-layer and clear over base paint colours using original equipment manufacturer (OEM) paint codes. This unit involves preparing for the task, selecting and using specialist tools and equipment, identifying paint codes, preparing colour matching test cards, mixing and spraying paint and conducting a visual colour match, and completing workplace processes and documentation.

The unit applies to those working in the automotive refinishing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Mix multi-layer clear	2.1 Set up and operate paint mixing system according to

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ELEMENTS	PERFORMANCE CRITERIA
over base colour	manufacturer specifications and workplace procedures 2.2 Mix paint according to manufacturer specifications, approved colour matching method, and workplace procedures
3. Prepare colour test card and perform visual matching	3.1 Prepare and spray colour matching test cards according to workplace procedures 3.2 Carry out visual matching, make comparisons between matched and original paint, and record paint codes according to workplace procedures and OEM paint codes 3.3 Remix paint for further matching prior to application if first mix does not match original paint
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and paint technical data sheets (TDS) and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.

Numeracy	• Interprets OEM paint codes and formulas
	• Uses basic mathematical operations, including addition, subtraction, multiplication and division to:
	  • determine ratios
	  • measure and calculate quantities of paint and materials.

Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes

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SKILL	DESCRIPTION
	• Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist colour matching tools • Uses computerised colour matching system and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTP014 Colour match multi-layer and clear over base two-pack paints on vehicles and components.

Links

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Assessment Requirements for AURVTP114 Colour match multi-layer and clear over base two-pack paints on vehicles and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- colour match at least five different vehicle body panels
- in the course of the above work, colour match at least one of each of the following paint types:
  - metallic paints
  - pearl paints
  - multi-layer paints
  - solid clear over base (COB) paints.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to colour match multi-layer and clear over base two-pack paints on vehicles and components, including:
  - original equipment manufacturer (OEM) paint colour codes and formulas
- workplace procedures required to colour match multi-layer and clear over base two-pack paints on vehicles and components including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials

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    - recycling procedures
- workplace health and safety (WHS) requirements relating to colour matching multi-layer and clear over base two-pack paints on vehicles and components, including procedures for:
    - selecting and using personal protective equipment (PPE)
    - using technical data sheets (TDS) and safety data sheets (SDS) for paint materials
    - handling and storing paint materials
    - using tools and equipment
    - using approved drying area
- environmental requirements relating to colour matching multi-layer and clear over base two-pack paints on vehicles and components, including procedures for trapping, storing and disposing of waste materials
- types and application methods for automotive paint, including correct use of positive air feed masks
- types and uses of paint materials, including:
    - two-pack clear coats
    - metallic finishes
    - pearl finishes
    - paint hardeners
    - water-based finishes
    - paint thinners
    - paint reducers
    - cleaning materials
- types and use of paint colour matching equipment, including:
    - paint mixing systems
    - spray gun set-up, use and maintenance
    - paint drying equipment and methods
    - tinting system
    - paint measuring system
    - viscosity measuring equipment
    - spectrometer type equipment
    - paint manufacturer colour swatches
    - approved spray area
    - polishing and cleaning equipment
    - metal or cardboard colour matching test cards
    - electronic paint mixing system and colour matching equipment
- colour matching methods and techniques for multi-layer and clear over base paints, including:
    - mixing system set-up and operation
    - colour test cards
    - visual colour matching tests

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  - wet to wet matching
  - edge to edge matching
  - hard line matching
  - dabbing
  - paint mixing techniques
  - using paint codes when matching
  - paint mixing methods
  - paint thinning methods
  - spraying techniques
  - drying procedures
- procedures for protecting vehicle and components when colour matching
- procedures for final inspection of colour matched multi-layer and clear over base two-pack paint.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the colour matching of multi-layer and clear over base paints they have undertaken with vehicles and components, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- OEM paint codes and formulas
- TDS and SDS for paint materials
- PPE required to colour match multi-layer and clear over base two-pack paints
- paint and materials to colour match multi-layer and clear over base colours
- colour test cards
- five different vehicle panels requiring painting and colour matching
- tools, equipment and materials appropriate for colour matching multi-layer and clear over base two-pack paints on vehicles and components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTP115 Match direct gloss solid paint colour on vehicles or components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to match vehicle or component direct gloss solid paint colours using original equipment manufacturer (OEM) paint codes. This unit involves preparing for the task, selecting and using specialist tools and equipment, identifying paint codes, preparing colour matching test cards, mixing and spraying paint and conducting a visual colour match, and completing workplace processes and documentation.

The unit applies to those working in the automotive refinishing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Mix direct gloss solid paint colours	2.1 Set up and operate paint mixing system according to manufacturer specifications and workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Mix paint according to manufacturer specifications, approved colour matching method, workplace procedures, workplace health and safety and environmental requirements
3. Prepare colour test card and perform visual matching	3.1 Prepare and spray colour matching test cards according to workplace procedures 3.2 Carry out visual matching, make comparisons between matched and original paint, and record paint codes according to workplace procedures, OEM paint codes, workplace health and safety and environmental requirements 3.3 Remix paint for further matching prior to application if first mix does not match original paint
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and paint technical data sheets (TDS) and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.

Numeracy	• Interprets OEM paint codes and formulas
	• Sets and use paint mixing system
	• Sets painting equipment air pressure
	• Uses basic mathematical operations, including addition, subtraction, multiplication and division to:
	  • determine ratios
	  • calculate quantities of paint and materials.

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SKILL	DESCRIPTION
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensure tasks are completed within workplace timeframes.
Technology	• Uses specialist tools • Uses computerised system and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTP015 Match direct gloss solid paint colour on vehicles or components.

Links

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Assessment Requirements for AURVTP115 Match direct gloss solid paint colour on vehicles or components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- perform visual paint colour matching on at least three different vehicle panels.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to match direct gloss solid paint colour on vehicles or components, including:
  - original equipment manufacturer (OEM) paint colour codes and formulas
- workplace procedures required to match direct gloss solid paint colour on vehicles or components including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to matching direct gloss solid paint colour on vehicles or components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) and safety data sheets (SDS) for paint materials
  - handling and storing paint materials
  - using tools and equipment

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    - using approved drying area
- environmental requirements relating to matching direct gloss solid paint colour on vehicles or components, including procedures for trapping, storing and disposing of waste materials
- types and application methods for automotive paint
- types and use of painting tools and equipment, including:
    - tinting system
    - paint measuring scales
    - paint strainers
    - spray guns
    - approved spray area
    - polishing and cleaning equipment
    - metal or cardboard colour matching test cards
- types and use of paint materials, including:
    - direct gloss two-pack enamels
    - paint hardeners
    - paint reducers
    - cleaning materials
- types and use of paint colour matching equipment, including:
    - paint mixing systems
    - spray gun set-up, use and maintenance
    - paint drying equipment and methods
    - correct use of positive air feed masks
- colour matching methods and techniques for solid colour paints, including:
    - mixing system set-up and operation
    - colour test cards
    - visual colour matching tests, including opacity and film build, texture and peel
    - wet to wet matching
    - edge to edge matching
    - hard line matching
    - dabbing
    - paint mixing techniques
    - using paint codes when matching
    - spraying techniques
    - drying procedures
    - paint mixing methods
    - paint thinning methods
    - appropriate light sources
- procedures for protecting vehicle and components when colour matching
- procedures for final inspection of completed solid colour matching.

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Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the direct gloss solid paint colour they have matched to vehicles or components, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- OEM paint codes and specifications
- TDS and SDS for paint materials
- PPE required to colour match direct gloss solid paint colours
- colour test cards
- paint and materials to colour match solid paint colours
- three different painted vehicle panels requiring colour matching of direct gloss solid paint
- tools, equipment and materials appropriate for matching direct gloss solid paint colour on vehicles or components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTP116 Rectify and touch up vehicle direct gloss paint faults using two-pack systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to rectify and touch up direct gloss paint faults on vehicle body components. This unit involves preparing for the task, selecting and using specialist tools and equipment, identifying and rectifying faults using two-pack paint according to manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those working in the automotive refinishing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Determine paint fault, its cause and	2.1 Identify cause of paint fault from available information 2.2 Inspect visually inspect faulty paintwork and determine

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ELEMENTS	PERFORMANCE CRITERIA
rectification requirements	extent of damage and areas requiring rectification 2.3 Assess damage to paintwork from visual comparison with undamaged paintwork 2.4 Identify requirements for fault rectification according to workplace procedures
3. Rectify and touch up paint fault	3.1 Identify materials required to restore paintwork to pre-damage condition according to paint manufacturer specifications and workplace procedures 3.2 Measure, mix and apply materials according to workplace procedures 3.3 Rectify damaged paintwork and blend with existing paintwork using direct gloss two-pack system and approved blending and drying techniques 3.4 Complete rectification processes according to workplace procedures and manufacturers specifications
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and paint technical data sheets (TDS) and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Numeracy	• Identifies paint specification codes • Uses basic mathematical operations, including addition, subtraction, multiplication and division to:

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SKILL	DESCRIPTION
	• calculate and measure quantities of paint and materials • determine ratios for mixing paint • calculate and set paint drying times • Sets spray painting air pressure and spray booth temperatures • Sets paint measuring system.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist tools and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTP016 Rectify and touch up vehicle direct gloss paint faults using two-pack systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP116 Rectify and touch up vehicle direct gloss paint faults using two-pack systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- rectify and touch up faults in the direct gloss paint of at least three different vehicles using two-pack systems, including:
  - using partial blend and fade-out blend on at least one vehicle
  - blending and clearing panels on at least one vehicle.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to rectify and touch up vehicle direct gloss paint faults using two-pack systems, including:
  - manufacturer's specifications or equivalent documentation
- workplace procedures required to rectify and touch up vehicle direct gloss paint faults using two-pack systems including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to rectifying and touching up vehicle direct gloss paint faults using two-pack systems, including procedures for:
  - selecting and using personal protective equipment (PPE)

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  - using technical data sheets (TDS) and safety data sheets (SDS) for direct gloss two-pack paint
  - handling and storing paint materials
  - using tools and equipment
  - using approved drying area
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- types and features of direct gloss materials
- types and use of painting equipment, including:
  - types of spray guns and maintenance requirements
  - spray gun set-up, use and maintenance
  - correct use of positive air feed masks
- paint rectification and touch-up techniques and procedures, including:
  - identifying paint surface faults
  - surface preparation methods
  - paint mixing procedures
  - direct gloss paint application methods and techniques
  - paint drying methods for direct gloss materials
- procedures for protecting vehicle and components when touching up paint faults
- procedures for final inspection of paint rectification and touch-up work using direct gloss two-pack systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to vehicle paintwork they have rectified using direct gloss two-pack materials, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- TDS and SDS for direct gloss two-pack paint
- PPE required to rectify paintwork using direct gloss two-pack paint systems
- direct gloss refinishing materials
- three different vehicles requiring paint rectification and touch-up using direct gloss two-pack refinishing

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- tools, equipment and materials appropriate for rectifying and touching up paint faults using direct gloss two-pack paint.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTP117 Rectify and touch up vehicle paint faults using clear over base two-pack systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to rectify and touch up paint faults on vehicle body components. This unit involves preparing for the task, selecting and using specialist tools and equipment, identifying and rectifying faults using clear over base (COB) two-pack paint materials according to manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those working in the automotive refinishing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Identify paint fault, its cause and rectification	2.1 Identify cause of paint fault from paint manufacturer information and confirm with appropriate personnel

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ELEMENTS	PERFORMANCE CRITERIA
requirements	2.2 Inspect visually inspect faulty paintwork according to workplace procedures 2.3 Assess damage to paintwork through visual comparison with undamaged paintwork 2.4 Identify fault rectification requirements according to manufacturer and workplace procedures
3. Rectify and touch-up paint faults	3.1 Identify materials required to restore paintwork to pre-damage condition from paint manufacturer recommended procedures 3.2 Measure, mix and apply materials using approved equipment 3.3 Rectify and blend damaged paintwork with existing paintwork using COB two-pack system and blending and drying techniques according to workplace procedures 3.4 Complete rectification processes according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and paint technical data sheets (TDS) and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.

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SKILL	DESCRIPTION

Numeracy	• Identifies paint specification codes
	• Uses basic mathematical operations, including addition, subtraction, multiplication and division to:
	  • calculate and measure quantities of paint and materials
	  • determine ratios for mixing paint
	  • calculate and set paint drying times
	• Sets spray painting air pressure and spray booth temperatures
	• Sets paint measuring system.

Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist tools and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTP017 Rectify and touch up vehicle paint faults using clear over base two-pack systems.

Links

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Assessment Requirements for AURVTP117 Rectify and touch up vehicle paint faults using clear over base two-pack systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- rectify and touch up faults on at least three different vehicles using clear over base (COB) two-pack paint materials, including:
  - using partial blend and fade-out blend on at least one vehicle
  - blending and clearing panels on at least one vehicle.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to rectify and touch up vehicle paint faults using clear over base two-pack systems, including:
  - paint manufacturer specifications and paint codes
  - paint technical data sheets
  - paint safety data sheets (SDS)
- workplace procedures required to rectify and touch up vehicle paint faults using clear over base two-pack systems including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to rectifying and touching up vehicle paint faults using clear over base two-pack systems, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) and safety data sheets (SDS) for COB two-pack paint
  - handling and storing paint materials
  - using tools and equipment
- environmental requirements relating to rectifying and touching up vehicle paint faults using clear over base two-pack systems, including procedures for trapping, storing and disposing of waste materials
- types and use of refinishing materials, including:
  - solvent base coats and clear coats
  - water-based materials
  - paint thinners and hardeners
  - polishing materials
- types and use of painting equipment, including:
  - types of spray guns and maintenance requirements
  - spray gun set-up, use and maintenance
  - correct use of positive air feed masks
  - using approved drying area
  - tinting systems
  - cleaning equipment
- paint rectification and touch-up techniques and procedures, including:
  - identifying paint surface faults
  - surface preparation methods
  - paint mixing procedures
  - COB two-pack paint application methods
  - paint drying methods
- procedures for protecting vehicle and components when rectifying and touching up paint
- procedures for final inspection of paint rectification and touch-up work using COB two-pack systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to vehicle paintwork they have rectified using COB two-pack systems, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- TDS and SDS for COB two-pack paint
- vehicle paint codes and specifications
- PPE required to rectify COB two-pack paint
- materials required to rectify and touch up COB two-pack paint
- three different vehicles requiring COB two-pack paint rectification and touch-up
- tools, equipment and materials appropriate for rectifying and touching up paint faults using COB two-pack systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP118 Rectify vehicle multi-layer and pearl paint faults using two-pack systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to rectify multi-layer and pearl paint faults on vehicle body components. This unit involves preparing for the task, selecting and using specialist tools and equipment, identifying and rectifying paint faults using multi-layer and pearl two-pack paint materials according to manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those working in the automotive refinishing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Determine paint fault, its cause and	2.1 Identify cause of paint fault 2.2 Inspect visually faulty paintwork according to workplace

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ELEMENTS	PERFORMANCE CRITERIA
rectification requirements	procedures 2.3 Identify and assess existing paint film build-up 2.4 Compare visually compare damaged paintwork with undamaged paintwork 2.5 Identify fault rectification requirements according to workplace procedures and job requirements
3. Carry out rectification and touch-up activities	3.1 Identify materials required to restore paintwork to pre-damage condition from paint manufacturer specifications and workplace procedures 3.2 Measure, mix and apply materials using approved equipment 3.3 Rectify damaged paintwork and blend with existing paintwork using two-pack system 3.4 Complete rectification processes according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and paint technical data sheets (TDS) and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Numeracy	• Identifies paint specification codes • Uses basic mathematical operations, including addition, subtraction, multiplication and division to: • calculate and measure quantities of paint and materials

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SKILL	DESCRIPTION
	• determine ratios for mixing paint • calculate and set paint drying times • Sets spray painting air pressure and spray booth temperatures • Sets paint measuring system.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist tools and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTP018 Rectify vehicle multi-layer and pearl paint faults using two-pack systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP118 Rectify vehicle multi-layer and pearl paint faults using two-pack systems

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- rectify multi-layer and pearl paint faults on at least three different vehicles using two-pack materials
- complete the following in the course of the above work:
  - blending and clearing a vehicle panel
  - partially blending and fading out blend.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to rectify vehicle multi-layer and pearl paint faults using two-pack systems, including:
  - paint manufacturer specifications
  - paint technical data sheets (TDS)
  - paint safety data sheets (SDS)
- workplace procedures required to rectify vehicle multi-layer and pearl paint faults using two-pack systems including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) and occupational health and safety (OHS) requirements relating to rectifying vehicle multi-layer and pearl paint faults using two-pack systems, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) and safety data sheets (SDS) for multi-layer and pearl two-pack paint
  - handling and storing paint materials
  - using tools and equipment
  - using approved drying area
- environmental requirements relating to rectifying vehicle multi-layer and pearl paint faults using two-pack systems, including procedures for trapping, storing and disposing of waste materials
- types and features of paint materials, including:
  - solvent base coats and clear coats
  - water-based materials
  - paint thinners and hardeners
  - polishing materials
- types and use of painting equipment, including:
  - types of spray guns and maintenance requirements
  - spray gun set-up, use and maintenance
  - correct use of positive air feed masks
- paint rectification and touch-up techniques and procedures, including:
  - identifying paint surface faults
  - surface preparation methods
  - paint mixing procedures
  - multi-layer and pearl paint application methods
  - drying methods for multi-layer and pearl paint refinishing materials
- procedures for protecting vehicle and components when rectifying and touching up paint faults
- procedures for final inspection of paint rectification using multi-layer and pearl two-pack systems.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle paintwork they have rectified using multi-layer and pearl two-pack systems, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- TDS and SDS for multi-layer and pearl two-pack paint
- PPE required to rectify multi-layer and pearl two-pack paint materials
- multi-layer and pearl two-pack refinishing materials
- three different vehicles requiring paint rectification using multi-layer and pearl two-pack paint refinishing materials
- tools, equipment and materials appropriate for rectifying and touching up multi-layer and pearl paint faults using two-pack systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTP123 Apply clear over base two-pack refinishing materials to vehicle body components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to mix and apply clear over base (COB) paint materials to vehicle body components. This unit involves preparing for the task, selecting and using specialist tools and equipment, identifying paint faults, preparing surface to be painted, selecting and applying COB two-pack refinishing materials according to manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those working in the automotive refinishing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
2. Mix COB two-pack refinishing materials	2.1 Calculate COB two-pack refinishing materials according to paint manufacturer specifications, formulas and codes 2.2 Record codes and information relevant to job requirement 2.3 Mix materials according to workplace procedures
3. Apply COB two-pack refinishing material	3.1 Apply refinishing materials using manufacturer recommended method and intervals, and according to workplace procedures 3.2 Dry refinishing materials and equipment according to workplace procedures and ensure painted surface meets specifications
4. Rectify paint faults	4.1 Identify paint faults according to industry and workplace procedures 4.2 Select rectification procedures according to fault or damage type 4.3 Identify required materials to rectify paintwork from paint manufacturer information 4.4 Rectify paint surface faults using compounds, polishes and glazes to blend rectified areas with existing paintwork
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and paint technical data sheets (TDS) and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures.

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SKILL	DESCRIPTION

Numeracy	• Interprets paint codes and formulas
	• Sets and adjusts spray painting air pressure and paint measuring system
	• Uses basic mathematical operations, including addition, subtraction, multiplication and division to:
	  • determine ratios
	  • measure and calculate quantities of paint and materials.

Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTP023 Apply clear over base two-pack refinishing materials to vehicle body components.

Links

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Assessment Requirements for AURVTP123 Apply clear over base two-pack refinishing materials to vehicle body components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- mix and apply clear over base (COB) two-pack refinishing materials to at least three different vehicles, at least two of which must include a different vehicle body component from among the following:
  - single vehicle panel
  - full vehicle side
  - vehicle front end or rear end.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to apply clear over base two-pack refinishing materials to vehicle body components, including:
  - vehicle paint specifications
- workplace procedures required to apply clear over base two-pack refinishing materials to vehicle body components including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to applying clear over base two-pack refinishing materials to vehicle body components, including procedures for:

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  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) and safety data sheets (SDS) for COB two-pack paint
  - handling and storing paint materials
  - using tools and equipment
  - using approved drying area
- environmental requirements relating to applying clear over base two-pack refinishing materials to vehicle body components, including procedures for trapping, storing and disposing of waste materials
- types and use of refinishing material, including:
  - solid, metallic and pearl two-pack base coat
  - clear two-pack acrylic enamel
  - water-based paints
  - hardener
  - paint reducer
  - cleaning solvents.
- types and application of automotive paint, including correct use of positive air feed masks
- mixing and application techniques for COB two-pack materials, including:
  - paint mixing techniques and systems
  - visual colour matching techniques and use of colour test cards
  - paint fault identification and rectification methods for COB two-pack refinishing materials
- types and use of paint colour matching equipment, including:
  - mixing system set-up and operation
  - set-up, operation and maintenance of spray guns
  - paint drying equipment
  - paint cleaning materials and equipment
- procedures for protecting vehicle and components when applying refinishing materials
- procedures for final inspection of completed COB two-pack application.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the COB two-pack materials they have applied to vehicle body components, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- workplace instructions
- paint and vehicle manufacturer specifications and paint codes
- TDS and SDS for COB two-pack paint
- PPE, including positive air feed masks
- COB refinishing materials
- three different vehicles with body components specified in the performance evidence requiring painting with COB two-pack refinishing materials
- tools, equipment and materials appropriate for applying COB two-pack refinishing materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTP124 Apply clear over base multi-layer and pearl refinishing materials to vehicle body components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to mix and apply clear over base (COB) multi-layer and pearl refinishing materials to vehicle body components. This unit involves preparing for the task, selecting and using specialist tools and equipment, identifying paint defects, preparing vehicle surfaces, selecting, mixing and applying refinishing materials according to manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those working in the automotive refinishing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Mix COB multi-layer	2.1 Calculate and mix refinishing materials according to

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ELEMENTS	PERFORMANCE CRITERIA
and pearl refinishing materials	workplace procedures, and paint manufacturer specifications, formulas and codes 2.2 Record codes and information relevant to job requirements 2.3 Carry out mixing activities according to workplace procedures
3. Apply COB multi-layer and pearl refinishing materials	3.1 Apply refinishing materials using manufacturer recommended method and intervals according to workplace procedures 3.2 Dry refinishing materials and equipment according to workplace procedures 3.3 Apply refinishing techniques to ensure painted surface meets job requirements 3.4 Rectify paint surface faults using compounds, polishes and glazes to blend rectified areas with existing paintwork according to workplace procedures
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and paint technical data sheets (TDS) and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Numeracy	• Interprets paint codes and formulas • Sets and adjusts settings for: • spray painting air pressure

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SKILL	DESCRIPTION
	• paint measuring system • spray booth temperature settings • Uses basic mathematical operations, including addition, subtraction, multiplication and division to: • determine ratios • measure and calculate quantities of paint and materials.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTP024 Apply clear over base multi-layer and pearl refinishing materials to vehicle body components.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP124 Apply clear over base multi-layer and pearl refinishing materials to vehicle body components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- mix and apply clear over base (COB) multi-layer pearl refinishing materials on at least three different vehicles, at least two of which must include a different vehicle body component from among the following:
  - single vehicle panel
  - full vehicle side
  - vehicle front end or rear end.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to apply clear over base multi-layer and pearl refinishing materials to vehicle body components, including:
  - vehicle paint specifications
- workplace procedures required to apply clear over base multi-layer and pearl refinishing materials to vehicle body components including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to applying clear over base multi-layer and pearl refinishing materials to vehicle body components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) and safety data sheets (SDS) for COB two-pack paint
  - handling and storing paint materials
  - using tools and equipment
  - using approved drying area
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- types and application methods for automotive paint, including correct use of positive air feed masks
- types and uses of refinishing materials, including:
  - metallic, pearl two-pack base coat
  - clear two-pack acrylic enamel
  - water-based paints
  - hardeners
  - paint reducers
- mixing and application techniques for COB multi-layer and pearl refinishing materials, including:
  - paint mixing techniques and systems
  - visual colour matching techniques and use of colour test cards
  - paint fault identification and rectification methods for COB multi-layer and pearl refinishing materials
- types and uses of paint colour matching equipment, including:
  - set-up and operation of paint mixing system
  - set-up, operation and maintenance of spray guns
  - paint drying equipment
  - paint cleaning materials and equipment
- procedures for protecting vehicles and components when applying refinishing materials
- procedures for final inspection of completed COB multi-layer pearl application.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the COB refinishing materials they have applied to vehicle body components, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- paint and vehicle manufacturer specifications, paint codes
- TDS and SDS for COB multi-layer and pearl refinishing materials
- PPE, including positive air feed masks
- materials to apply COB multi-layer and pearl refinishing materials
- COB refinishing materials
- three different vehicles or panels requiring painting with COB multi-layer and pearl refinishing materials
- tools, equipment and materials appropriate for mixing and applying COB multi-layer and pearl refinishing materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTP125 Apply water-based refinishing materials to vehicle bodies and substrates

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to mix and apply water-based refinishing materials in order to refinish a variety of vehicle bodies and substrates. This unit involves preparing for the task, selecting and using specialist tools and equipment, identifying paint defects, preparing surfaces, selecting, mixing and applying water-based refinishing materials according to manufacturer specifications, and completing workplace processes and documentation.

The unit applies to those working in the automotive refinishing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Identify job requirements from workplace instructions 1.2 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.3 Identify tools, equipment and chemicals required for repair activity and establish serviceability according to workplace procedures
2. Mix water-based	2.1 Calculate and mix water-based paint materials according to

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ELEMENTS	PERFORMANCE CRITERIA
refinishing materials	paint manufacturer specifications, formulas, codes and workplace procedures 2.2 Record codes and information relevant to job requirements
3. Apply water-based refinishing materials	3.1 Apply refinishing materials using manufacturer recommended method and intervals, and techniques that ensure painted surface meets job requirements, according to workplace procedures 3.2 Dry refinishing materials using approved methods and equipment
4. Rectify paint faults	4.1 Identify paint faults according to workplace procedures 4.2 Select rectification procedures according to fault or damage type 4.3 Select materials to rectify paintwork from paint manufacturer information 4.4 Rectify paint surface faults using compounds, polishes and glazes to blend rectified areas with existing paintwork
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Reading	• Interprets workplace instructions such as job cards • Organises and interprets technical information from workplace procedures, manufacturer specifications, industry standards and paint technical data sheets (TDS) and safety data sheets (SDS).
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.

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SKILL	DESCRIPTION

Numeracy	• Interprets paint codes and formulas
	• Sets and adjusts settings for:
	  • spray painting air pressure
	  • paint measuring system
	  • spray booth temperature settings
	• Uses basic mathematical operations, including addition, subtraction, multiplication and division to:
	  • determine ratios
	  • measure and calculate quantities of paint and materials.

Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTP025 Apply water-based refinishing materials to vehicle bodies and substrates.

Links

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Assessment Requirements for AURVTP125 Apply water-based refinishing materials to vehicle bodies and substrates

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- apply water-based refinishing materials on at least three different vehicle substrates, at least two of which must include a different vehicle body component from among the following:
  - vehicle panel
  - full vehicle side
  - vehicle front end or rear end.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to apply water-based refinishing materials to vehicle bodies and substrates, including:
  - paint manufacturer specifications
- workplace procedures required to apply water-based refinishing materials to vehicle bodies and substrates including:
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to applying water-based refinishing materials to vehicle bodies and substrates, including procedures for:

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  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) and safety data sheets (SDS) for water-based paint
  - handling and storing paint materials
  - using tools and equipment
  - using approved drying area
- environmental requirements relating to applying water-based refinishing materials to vehicle bodies and substrates, including procedures for trapping, storing and disposing of waste materials
- types and uses of refinishing materials, including:
  - water-based solid, metallic and pearl paint materials
  - water-based paint reducers and hardeners
  - cleaning materials
- types and application methods for automotive water-based refinishing materials, including correct use of positive air feed masks
- mixing and application techniques for water-based refinishing materials, including:
  - paint mixing techniques and systems
  - paint fault identification and rectification methods for water-based refinishing materials
- types and use of equipment used in water-based refinishing processes, including:
  - set-up and operation of paint mixing system
  - set-up, operation and maintenance of spray guns
  - paint drying equipment
- paint cleaning materials and equipment procedures for protecting vehicle and components when applying refinishing materials
- procedures for final inspection of applied water-based refinishing materials.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having applied water-based refinishing materials to vehicle bodies and substrates, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- paint and vehicle manufacturer specifications
- paint codes

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- TDS and SDS for water-based paint
- PPE, including positive air feed masks
- water-based refinishing materials
- three different vehicle substrates specified in the performance evidence requiring painting with water-based refinishing materials
- tools, equipment and materials appropriate for mixing and applying water-based refinishing materials to vehicle bodies and substrates.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTP128 Carry out custom painting techniques to vehicle body panels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to prepare and apply custom painting techniques to a variety of vehicle body panels or substrates in order to produce custom illustrations, graphics and visual effects. It includes developing paint stencils and applying clear or tinted topcoat refinishing materials by spray gun application. This unit involves preparing for the task, selecting and using specialist tools and equipment, selecting designs and creating special painted effects using refinishing materials according to workplace or customer instructions, and completing workplace processes and documentation.

The unit applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to carry out custom painting on vehicle body panels	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret painting information 1.3 Access and interpret custom design specifications 1.4 Identify hazards associated with the work and manage risks 1.5 Identify and check design stencils, painting equipment, and materials for quality and serviceability 1.6 Prepare work plan to identify custom painting application

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ELEMENTS	PERFORMANCE CRITERIA
	methods, minimise waste, and prevent damage to vehicle
2. Determine custom design	2.1 Select custom paint design, layout and colour according to workplace instructions, design specifications, and customer order 2.2 Develop and refine draft design to customer requirements 2.3 Confirm approved custom graphic design with customer
3. Prepare design templates and stencils	3.1 Prepare design stencils and templates based on design and shape specifications and check against workplace instructions 3.2 Apply design to stencils 3.3 Cut out stencils using selected tools according to workplace procedures and safety and environmental requirements
4. Mix and apply paint to create a variety of different visual effects	4.1 Prepare substrate for the application of custom paint finishes 4.2 Select colour combinations and equipment required to produce various painting effects to reproduce the custom painting design 4.3 Mix paint colours and apply tonal order to replicate custom design 4.4 Produce lines, shapes, patterns and illustrations using freehand techniques with the assistance of stencils 4.5 Identify required backgrounds, colour combinations, and effective colours and apply special effects to produce custom illustrations and graphics 4.6 Produce visual texture, and light and shade, on the given design or subject matter according to customer specifications
5. Prepare and apply clear topcoat	5.1 Prepare painted surface for clear topcoat finish using solvent cleaners and tack rags 5.2 Mix and apply refinishing clear topcoat materials without causing damage to vehicle, systems or components
6. Complete work processes	6.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 6.2 Clear work area and dispose of or recycle materials according to workplace procedures 6.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

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SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently • Interprets, responds and keeps up to date with ways to address diverse customer custom painting design requests.
Numeracy	• Identifies and measures stencil and layout dimensions • Uses basic mathematical operations, including addition and subtraction, to: • determine ratios • Measures and calculates quantities of paint and materials.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Technology	• Uses specialised equipment and measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTP028 Carry out custom painting techniques to vehicle body panels.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP128 Carry out custom painting techniques to vehicle body panels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- apply custom and special effects painting techniques to at least two different vehicle body panels, in which the work must involve:
  - determining design size
  - using a range of graphics
  - using different colours and paint layering.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out custom painting techniques to vehicle body panels, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - paint technical data sheets (TDS) and safety data sheets (SDS)
- workplace procedures required to carry out custom painting techniques to vehicle body panels, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- work health and safety (WHS) requirements relating to carrying out custom painting techniques to vehicle body panels, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - technical data sheets (TDS) and safety data sheets (SDS) for paint materials
  - handling and storing paint materials
  - using tools and equipment
  - using approved drying area
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- required components of draft design, including:
  - size and colour
  - number of overlays
  - stencils and graphics preferences
- types and application methods for:
  - automotive paints used for custom painting
  - clear top coat refinishing materials, including:
    - meeting job requirements for texture, depth, and gloss
    - being free of contaminants
  - colour layering processes
- custom painting and application techniques, including:
  - custom graphic design templates, stencils and layout techniques, including:
    - freehand drawing
    - photography
    - projector or computer-aided printing
    - cutting methods
  - custom painting pictorial reproduction techniques
  - custom painting special effect techniques, including:
    - highlighting, reflection and transparency techniques
    - simulating texture, including metal, stone, liquid, leather, fish scales and marbling
    - three-dimensional (3D) effects to create visual realism
    - tribal or indigenous art styles
    - colour layering processes
  - paint mixing and application
  - drying procedures
  - various spraying techniques
  - polishing and detailing surfaces
- types and use of custom painting equipment and materials, including:
  - templates and stencils
  - masking mediums
  - paints and glazes

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  - types of spray guns
  - correct use of positive air feed masks
  - spray gun operation and spraying techniques
  - spray gun cleaning methods
  - paint cleaning materials and equipment
- procedures for protecting vehicle and components when applying paint
- procedures for final inspection of custom paint job.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the custom paint work they have completed on vehicle body panels, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- TDS and SDS for paint materials
- PPE required to apply custom painting, including positive air feed masks
- paint and materials required for custom painting
- airbrush spray guns
- paint drying equipment
- two different vehicle body panels requiring the application of custom painting
- tools, equipment and materials appropriate for carrying out custom painting techniques on vehicle body panels.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP129 Prepare surface and prime repaired body panels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to prepare and prime a repaired body panel of a vehicle. It requires the learner to plan and prepare the task; identify types of automotive abrasives; remove protective waxes and surface contaminants; feather paint edges; apply filler; and maintain the work area, tools and equipment. This unit applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to prime a repaired body panel	1.1 Source and interpret safety and environmental requirements 1.2 Interpret task instruction and identify vehicle body panel to be worked on 1.3 Source and interpret manufacturer specifications and workplace procedures for removing paint and preparing surface 1.4 Identify potential hazards and risks associated with task and report to workplace supervisor

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	1.5 Identify tools and equipment required for priming body panel according to manufacturer specifications
2. Prepare body panel for priming	2.1 Select and check tools, equipment and materials for priming body panel prior to use according to manufacturer specifications and safety requirements 2.2 Prepare vehicle body panel for priming according to workplace procedures and safety and environmental requirements, and without causing damage to components, tools or equipment 2.3 Inspect body panel according to manufacturer specifications 2.4 Record body panel inspection results
3. Apply primer to body panel	3.1 Prepare primer for application according to manufacturer specifications and safety and environmental requirements 3.2 Apply primer according to workplace procedures, manufacturer specifications, and safety and environmental requirements 3.3 Apply primer to body panel without causing damage to body panel, components, tools or equipment 3.4 Inspect body panel to ensure required application of primer to body panel 3.5 Record body panel inspection results
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Learning	• Locates required sources of information efficiently.
Numeracy	• Reads and interprets numerical information in paint information • Uses basic mathematical operations, including addition, subtraction, multiplication and division, to calculate volumes and ratios.
Oral communication	• Participates effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey

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SKILL	DESCRIPTION
	information.
Reading	• Selects and interprets key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Planning and organising	• Plans own work activities • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Problem solving	• Identifies potential or actual hazards and takes action to minimise risk • Refers problems that cannot be readily resolved and seeks assistance from workplace supervisor.
Self-management	• Recognises own limitations when selecting and using tools and equipment and seek timely advice.
Technology	• Sets up and operates specialised equipment and tools.

Unit Mapping Information

Supersedes and is equivalent to AURVTP029 Prepare surface and prime repaired body panels.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP129 Prepare surface and prime repaired body panels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- surface prepare and prime at least two major vehicle body panels.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to prepare surface and prime repaired body panels, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to prepare surface and prime repaired body panels, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- key aspects of work health and safety (WHS) and environmental requirements, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools, including air and electric sanders

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    - safety data sheets (SDS) and procedures for handling and disposing of used primer, emulsions and solvents
    - procedures for extraction of fumes
- types, grades and uses of abrasives and sandpaper
- tools, equipment and materials relating to preparing surface and prime repaired body panels, including:
    - preparation and spray areas with fume extraction
    - spray gun equipment
    - wet and dry paper
    - sanding discs
    - emulsion materials
    - filler
    - primers
- types of vehicles that vehicle body panels could be sourced from, including:
    - passenger vehicle
    - light commercial vehicle
    - heavy vehicle
    - constructed vehicle
- workplace procedures for:
    - wet and dry sanding
    - surface preparation
    - paint feather edging and precautions
- types of filler and primers and their use, including:
    - etch primer
    - primer surfacer
- filler and primer application procedures
- work area clean-up and maintenance requirements.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the repaired body panels that they have surface prepared and primed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace

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- personal protective equipment appropriate to the workplace
- two major vehicle body panels
- tools, equipment and materials, including:
  - preparation and spray areas with fume extraction
  - spray gun equipment
  - wet and dry paper
  - spray gun equipment
  - sanding discs
  - emulsion materials
  - filler
  - primers, including:
    - etch primer
    - primer surfacer
  - solvents.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTP130 Apply paint to vehicle body panels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to apply paint to vehicle body panels. This unit involves planning and preparing for the task, selecting paint from a colour code, tinting and mixing paint, applying paint to a panel using a spray gun, drying the panel, and maintaining the work area, tools and equipment.

This unit applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Interpret task instructions and identify vehicle body panel to be worked on 1.2 Interpret vehicle colour codes and determine paint type, colour, quality and quantity 1.3 Source and interpret manufacturer specifications and workplace procedures for painting body panel 1.4 Source and interpret safety and environmental requirements 1.5 Spray gun and air line equipment, and identify and check paint

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ELEMENTS	PERFORMANCE CRITERIA
	mixing and tinting equipment for serviceability 1.6 Identify potential hazards and risks associated with task and report to workplace supervisor
2. Tint and mix paint	2.1 Calculate paint colour tint requirements to achieve vehicle colour code 2.2 Mix paint according to manufacturer specifications, workplace procedures, and safety and environmental requirements 2.3 Record paint colour and mixing requirements
3. Apply top coat	3.1 Apply paint using manufacturer recommended method and intervals according to safety and environmental requirements 3.2 Dry paint using approved methods and equipment 3.3 Inspect body panel to ensure painted surface meets requirements for colour and finish
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Uses basic mathematical operations, including addition, subtraction, multiplication and division, to calculate volumes.
Oral communication	• Clarifies instructions and procedures.

Reading	• Selects and interprets key information from:
	  • manufacturer specifications, safety requirements and workplace procedures relating to applying paint to body panels
	  • environmental requirements and workplace procedures to ensure a clean and safe work site.

Planning and organising	• Plans own work activities • Prioritises actions to achieve required outcomes

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SKILL	DESCRIPTION
	• Ensures tasks are completed within workplace timeframes.
Technology	• Sets up and operates specialised equipment and tools.

Unit Mapping Information

Supersedes and is equivalent to AURVTP030 Apply paint to vehicle body panels.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP130 Apply paint to vehicle body panels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- apply vehicle paint to at least two different major vehicle body panels.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to apply paint to vehicle body panels, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to apply paint to vehicle body panels, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to applying paint to vehicle body panels, including procedures for:
  - selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear
  - using hand tools
  - using fume extraction equipment

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- environmental requirements, including procedures for trapping, storing and disposing of paint and cleaning materials
- paint colour mixing procedures, including:
  - vehicle colour code systems
  - colour tint calculation procedures
  - use of mixing scales
  - determining top coat
- panel painting procedures, including:
  - types, application and operation of spray guns
  - spray gun strain and spray test patterns
- procedures for final inspection of painted vehicle body panels.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the body panels that they have painted, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE for painting vehicle panels
- two different major vehicle body panels
- spray gun
- tools, equipment and materials for painting vehicle panels.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP131 Cut and polish painted vehicle body panels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to cut and polish the painted surface of vehicle body panels. This unit involves planning and preparing for the task, identifying types of vehicle paint surfaces and finishes, cutting and polishing vehicle panels, and maintaining the work area, tools and equipment.

This unit applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to cut and polish vehicle body panel	1.1 Interpret task instructions and identify body panel to be worked on 1.2 Identify paint finish type and document according to workplace procedures 1.3 Source and interpret manufacturer specifications and workplace procedures for cutting and polishing body panel surface 1.4 Source and interpret safety and environmental requirements

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify potential hazards and risks associated with task and report to workplace supervisor 1.6 Identify tools and equipment required for cutting and polishing body panel and check for serviceability
2. Cut and polish body panel	2.1 Use polishing tools and equipment according to workplace procedures and safety and environmental requirements, and without causing damage to vehicle components or systems 2.2 Use products according to vehicle paint finish type, workplace methods, and paint manufacturer specifications 2.3 Polish exterior paint finish according to workplace and manufacturer prescribed procedures
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Clarifies instructions and procedures.

Reading	• Selects and interprets key information from:
	  • manufacturer specifications, safety requirements and workplace procedures for cutting and polishing vehicle body panels
	  • environmental requirements and workplace procedures to ensure a clean and safe work site.

Planning and organising	• Plans own work activities • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Sets up and operates specialised equipment and tools.

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Unit Mapping Information

Supersedes and is equivalent to AURVTP031 Cut and polish painted vehicle body panels.

Links

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Assessment Requirements for AURVTP131 Cut and polish painted vehicle body panels

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- cut and polish the body panels of at least one vehicle.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to cut and polish painted vehicle body panels, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to cut and polish painted vehicle body panels, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to cutting and polishing painted vehicle body panels, including procedures for:
  - selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear
  - using hand tools

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- environmental requirements, including procedures for trapping, storing and disposing of polishing materials
- types of vehicle panel paints and finishes and implications for choice of polishing materials
- vehicle panel cutting and polishing procedures, including:
  - types and applications of polishing materials, including methods for testing on vehicle paints and finishes
  - types, application and operation of polishing equipment
- procedures for final inspection of cut and polished vehicle body panels.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the body panels that they have cut and polished, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE for cutting and polishing vehicle panels
- one vehicle requiring its body panels to be cut and polished
- tools, equipment and materials for cutting and polishing vehicle panels.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP132 Prepare and mask vehicle body panel surfaces

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to prepare and mask the body panel of a vehicle. It involves planning and preparing for the task, identifying types of masking materials used in vehicle painting, removing protective waxes and surface contaminants, applying masking, and maintaining the work area, tools and equipment.

The unit applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Paint

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Interpret task instructions and identify vehicle body panel to be worked on 1.2 Source and interpret manufacturer specifications and workplace procedures for preparing panel surface 1.3 Source and interpret safety and environmental requirements 1.4 Identify potential hazards and risks associated with task and report to workplace supervisor 1.5 Identify tools and equipment required for preparing body

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ELEMENTS	PERFORMANCE CRITERIA
	panel and check for serviceability
2. Prepare surfaces for masking	2.1 Clean panel surface and check for contaminants according to workplace procedures and safety and environmental requirements, and without causing damage to components and systems 2.2 Inspect body panel according to workplace requirements 2.3 Record body panel inspection results
3. Apply masking materials to surface	3.1 Protect or remove components and fittings that can be affected by the refinishing process according to workplace procedures and safety requirements, and without causing damage to components and systems 3.2 Apply masking to surfaces adjacent to the area to be refinished according to workplace procedures and safety requirements, and without causing damage to components and systems 3.3 Inspect body panel to ensure application of masking 3.4 Record body panel inspection results
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Clarifies instructions and procedures.

Reading	• Selects and interprets key information from:
	  • manufacturer specifications, safety requirements and workplace procedures for preparing surfaces and masking body panels
	  • environmental requirements and workplace procedures to ensure a clean and safe work site.

Planning and organising	• Plans work activities and prioritises actions to achieve required outcomes.

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SKILL	DESCRIPTION
Technology	• Sets up and operates specialised equipment and tools.

Unit Mapping Information

Supersedes and is equivalent to AURVTP032 Prepare and mask vehicle body panel surfaces.

Links

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Assessment Requirements for AURVTP132 Prepare and mask vehicle body panel surfaces

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare the surface for masking and apply masking materials to at least two different major vehicle body panels.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to prepare and mask vehicle body panel surfaces, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to prepare and mask vehicle body panel surfaces, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to preparing and masking vehicle body panel surfaces, including procedures for:
  - selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear
  - using hand tools

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- environmental requirements, including procedures for trapping, storing and disposing of used cleaning agents
- panel pre-painting preparation procedures, including cleaning and inspection
- panel masking procedures, including types and use of masking materials, including:
  - spray on
  - paper
  - plastics
  - templates
  - wheel covers
- procedures for final inspection of masked vehicle body panels.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the body panels that they have surface prepared and masked, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE for preparing and masking vehicle panels
- two different major vehicle body panels requiring the application of masking materials
- tools, equipment and materials for preparing and masking vehicle panels.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTS103 Fabricate vehicle composite material components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to fabricate components for automotive application, using composite materials such as fibreglass and carbon fibre. It involves preparing for the task, selecting and using specialist tools and equipment, identifying composite materials, calculating material quantities, mixing and applying recommended composite materials, finishing components to workplace and customer specifications, and completing workplace processes and documentation.

The unit applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Fabrication

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to fabricate vehicle composite material component	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret composite information 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check composite materials and equipment and personal protective equipment (PPE) for serviceability 1.5 Measure and calculate component surface area to determine required quantities of gel coat, resins, catalyst and matting 1.6 Check work area with approved ventilation for required operation and report faults to authorised personnel

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ELEMENTS	PERFORMANCE CRITERIA
	1.7 Plan work to identify methods to fabricate component, minimise waste, and use time efficiently
2. Fabricate component	2.1 Set up and prepare equipment and materials for use 2.2 Mix and apply composite materials according to manufacturer and equipment specifications to fabricate component 2.3 Fabricate component using composite materials according to workplace procedures and safety and environmental requirements, and without causing damage to vehicle and equipment 2.4 Check fabricated component against job specifications and workplace quality requirements
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.

Numeracy	• Uses basic mathematical operations, including addition, subtraction, multiplication and division to:
	  • calculate component surface area
	  • calculate quantities of composite materials
	• Determines ratios and mixing percentages.

Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Technology	• Uses specialist tools and equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURVTS003 Fabricate vehicle composite material components.

Links

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Assessment Requirements for AURVTS103 Fabricate vehicle composite material components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- fabricate at least two different vehicle composite components, in which the work must involve at least one air intake.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to fabricate vehicle composite material components, including:
  - information provided by customer and supervisor
  - manufacturer specifications and procedures or equivalent documentation
  - composite material safety data sheets (SDS)
  - workplace procedures
- workplace procedures required to fabricate vehicle composite material components, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to fabricating vehicle composite material components, including procedures for:

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    - selecting and using personal protective equipment (PPE)
    - using tools and equipment
    - satisfying ventilation requirements for work area
    - using safety data sheets (SDS) for composite materials
    - handling and storing hazardous resins and chemicals
- environmental requirements, including procedures for trapping, storing and disposing of resins, chemicals and waste materials produced during fabrication process
- equipment relating to fabricating vehicle composite material components, including:
    - release agents
    - measuring equipment
    - composite specialist tools
    - mixing containers
    - moulds and jigs
- types and features of composite materials, including:
    - gel coats
    - resins
    - catalysts
    - composite matting
- fabrication methods and techniques, including:
    - hand and machine operations
    - mixing and measuring composite materials
    - mould and plug usage
- procedures for final inspection of fabricated composite components.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the composite components that they have fabricated for vehicles, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required to fabricate composite components
- SDS for composite materials
- materials to fabricate composite components

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- two different vehicle composite components to be fabricated
- tools, equipment and materials tools, equipment and materials appropriate for fabricating vehicle composite material components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTS104 Repair vehicle composite material components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to repair components on vehicle bodies using composite materials. It involves preparing for the task, selecting and using specialist tools and equipment, identifying suitable composite materials, calculating material quantities, mixing and applying recommended composite materials to repair components according to workplace and customer specifications, and completing workplace processes and documentation.

This unit applies to those working in the automotive service and body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical – Fabrication

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair vehicle composite material component	1.1 Use workplace instructions to determine job requirements 1.2 Access and interpret fibreglass and composite material repair information is accessed and interpreted from workplace procedures and manufacturer specifications 1.3 Identify, select and inspect composite materials for quality 1.4 Identify hazards associated with the work and manage risks 1.5 Check work area with approved ventilation for required operation and report faults to authorised personnel 1.6 Identify composite tools and equipment and personal

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ELEMENTS	PERFORMANCE CRITERIA
	protective equipment (PPE) and check for serviceability 1.7 Prepare work area and plan work to identify methods for repairing a vehicle using composite materials and to minimise waste
2. Carry out repair activities	2.1 Locate items to be repaired and assess damage or faults to determine repair methods 2.2 Set up tools and equipment and mix and prepare materials for use 2.3 Carry out repairs to composite material components according to workplace procedures and safety and environmental requirements 2.4 Apply reinforcement techniques to reinstate pre-damage strength to composite materials 2.5 Apply finishing techniques to present composite surfaces to manufacturer and workplace quality standards 2.6 Complete repairs to composite material components without causing damage to equipment and components
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.

Numeracy	• Uses basic mathematical operations, including addition, subtraction, multiplication and division to:
	  • calculate component surface area
	  • calculate quantities of composite and fibreglass materials
	• Determines ratios and mixing percentages.

Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Planning and organising	• Plans own work requirements

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SKILL	DESCRIPTION
	• Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist composite material tools and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTS004 Repair vehicle composite material components.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTS104 Repair vehicle composite material components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- repair composite components of at least two different vehicles, including a repair to a different one of the following for each:
  - a 50 mm diameter hole
  - a 100 mm split.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to repair vehicle composite material components, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to repair vehicle composite material components, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to repairing vehicle composite material components, including procedures for:

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    - selecting and using personal protective equipment (PPE)
    - using tools and equipment
    - satisfying ventilation requirements for work area
    - using safety data sheets (SDS) for composite materials
    - handling and storing hazardous resins and chemicals
- environmental requirements, including procedures for trapping, storing and disposing of resins, chemicals and waste materials produced during fabrication process
- fibreglass and composite material repair procedures and techniques, including:
    - types and application of specialist composite tools and equipment
        - composite material measuring equipment
        - specialist hand tools
    - types and features of fibreglass and composite materials including:
        - fibreglass matting
        - gel coats
        - release agents
        - resins
        - catalysts
        - cleaning materials
    - use of composite moulds required for support backing during repair
    - measuring and calculation techniques
    - surface preparation for composite repairs
    - mixing and applying composite materials according to manufacturer specifications
    - finishing techniques for composite surfaces
    - reinforcement methods to reinstate pre-damage strength
    - composite repair problems and resolution techniques
- procedures for final inspection of repaired composite component.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle components made of composite materials that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- PPE required to repair composite components
- SDS for composite materials
- composite materials
- two different vehicles requiring the composite component repairs specified in the performance evidence
- tools, equipment and materials appropriate for repairing vehicle composite material components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTS105 Fabricate vehicle body panels and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to measure, develop patterns and templates, and fabricate body panels and components. It involves preparing for the task, selecting and using specialist tools and equipment, selecting and cutting materials according to patterns, templates and specifications, preparing cut edges, fabricating panels, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Fabrication

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to fabricate vehicle body panel and components	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret manufacturer specifications and workplace procedures 1.3 Identify panel materials from workplace instructions and inspect for quality 1.4 Identify hazards associated with the work and manage risks 1.5 Identify and select fabrication tools and equipment and check for serviceability 1.6 Plan work to identify methods to fabricate vehicle body panel and components, minimise waste, and use time efficiently

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ELEMENTS	PERFORMANCE CRITERIA
2. Produce patterns and templates	2.1 Identify and follow workplace procedures and safety and environmental requirements 2.2 Produce paper patterns from sample panel or simulated frame 2.3 Produce templates to fit sample panel or simulated frame 2.4 Identify convex and concave shapes when developing templates and paper patterns
3. Cut material	3.1 Select panel steel or aluminium sections needed for the fabrication and inspect for quality 3.2 Transfer and secure paper patterns and templates to steel or aluminium sheet surface ready for cutting 3.3 Use selected hand tools to cut steel or aluminium to pattern and panel specification 3.4 File panels to remove sharp edges
4. Shape panels	4.1 Fabricate required shapes to pattern specification, following safety and environmental requirements and workplace procedures 4.2 Check shaped panel sections against pattern and template specifications for quality finish and conformity 4.3 Fit panels to vehicle or frame without distortion
5. Complete work processes	5.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 5.2 Clear work area and dispose of or recycle materials according to workplace procedures 5.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Reads tape measures and rulers • Measures and calculates panel material, size, shape and specifications • Uses basic mathematical operations, including addition and subtraction, to calculate panel material quantity.

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SKILL	DESCRIPTION
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Sets up and operates specialised equipment and tools.

Unit Mapping Information

Supersedes and is equivalent to AURVTS005 Fabricate vehicle body panels and components.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTS105 Fabricate vehicle body panels and components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- fabricate at least two different vehicle body panels and their components, at least one of which must include a vehicle door skin lower half.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to fabricate vehicle body panels and components, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to fabricate vehicle body panels, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to fabricating vehicle body panels and components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and equipment

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- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- tools and equipment relating to fabricating vehicle body panels and components, including:
  - specialist hand tools
  - panel shaping equipment
  - English wheeling machine
  - specialist cutting equipment
- panel fabrication methods and techniques, including:
  - type of panel materials and application, including:
    - mild steel sheeting
    - aluminium sheeting
    - paper for pattern
    - cardboard for templates
  - marking out and cutting procedures
  - type and correct use of panel fabrication tools and equipment
  - techniques for producing paper patterns and templates
  - panel fabrication methods
  - wheeling and shaping techniques
- paper pattern requirements, including:
  - panel size and shape
  - all folds and edges for fabrication process
- procedures for final inspection of fabricated body panels and components.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle body panels and components that they have fabricated, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required to fabricate body panels
- materials to fabricate body panels and components
- two different vehicle body panels and components requiring fabrication

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- tools, equipment and materials appropriate for fabricating vehicle body panels and components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTT121 Select and apply adhesives in automotive and marine service and repair work

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to select and use adhesives with a range of automotive and marine surfaces. It involves preparing for the task, selecting and using tools and equipment, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry. The adhesives include those used with automotive, marine, motorcycle, aircraft or recreational vehicle materials.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Trimming and Upholstery

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret adhesive information 1.3 Identify hazards associated with the work and manage risks 1.4 Select tools and equipment and check for serviceability 1.5 Prepare work area and plan work to minimise waste and use time efficiently
2. Select adhesive	2.1 Select required adhesive for specific automotive materials according to manufacturer specifications and workplace

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ELEMENTS	PERFORMANCE CRITERIA
	procedures 2.2 Identify and follow specific safety data sheet (SDS) information for selected adhesive
3. Apply adhesive to prepared surfaces	3.1 Clean and prepare surfaces according to adhesive manufacturer specifications 3.2 Apply adhesives according to workplace procedures and safety and environmental requirements, and without causing damage to system or components
4. Complete work processes	4.1 Make final adhesive selection and present for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses specialist tools and equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTT021 Select and apply adhesives in automotive and marine service and repair work.

Links

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Assessment Requirements for AURVTT121 Select and apply adhesives in automotive and marine service and repair work

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- select and apply adhesives to at least three different automotive or marine components, in which the work must involve at least one door trim.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to select and apply adhesives in automotive and marine service and repair work, including:
  - information provided by customer and supervisors
  - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to select and apply adhesives in automotive and marine service and repair work, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to selecting and applying adhesives in automotive and marine service and repair work, including procedures for:
  - selecting and using PPE
  - using safety data sheets (SDS) for adhesives

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    - using specialist tools and equipment
    - storing adhesives
- environmental requirements, including procedures for trapping, storing and disposing of adhesives and waste materials
- information relating to adhesives, including:
    - adhesive-specific specifications
    - adhesive-specific application and removal instructions and processes
    - SDS information
- adhesive manufacturer specifications
- adhesive types required for different automotive and marine materials
- adhesive application techniques and procedures, including:
    - surface preparation
    - application
    - cleaning and disposal
- procedures for protecting vehicle, vessel and components when applying adhesives
- procedures for final inspection of applied adhesive.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the adhesives they have selected and used on vehicles, vessels and components, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- instructions relating to the selection and use of adhesives
- SDS for adhesives
- adhesives
- PPE required to use adhesives
- three different automotive or marine components as specified in the performance evidence requiring the use of adhesives
- tools, equipment and materials appropriate for applying adhesives.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTW101 Carry out manual metal arc welding on components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to prepare and weld components using the manual metal arc welding (MMAW) process. It involves preparing for the task, setting up and operating MMAW equipment, performing welding to required standards and specifications, inspecting weld quality, and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and prepare to weld component	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret welding information 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify welding electrodes, weld size, type and sequence, and quantity of materials required according to workplace procedures 1.5 Identify tools and equipment required for welding and

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ELEMENTS	PERFORMANCE CRITERIA
	establish serviceability according to workplace procedures
2. Weld materials using MMAW	2.1 Set up and operate welding equipment according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 2.2 Identify distortion prevention measures and adjust as required 2.3 Carry out welding test runs according to workplace procedures 2.4 Weld materials using MMAW process according to workplace procedures and required specifications
3. Check welds	3.1 Carry out non-destructive inspection and confirm weld quality and specifications 3.2 Identify weld defects and prepare for re-welding as required, notifying appropriate personnel
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm component is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Numeracy	• Identifies and set welding machine settings • Identifies welding rod specifications.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Problem solving	• Identifies weld defects, quality issues and potential problems associated with MMAW process and refers problems to appropriate person.

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SKILL	DESCRIPTION
Technology	• Uses specialist MMAW equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTW001 Carry out manual metal arc welding on components.

Links

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Assessment Requirements for AURVTW101 Carry out manual metal arc welding on components

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out manual metal arc welding (MMAW), including:
  - three bead runs, 200 mm long
  - three pad welds, 200 mm long
  - three butt welds, 200 mm long
  - three lap welds, 200 mm long
  - one T-fillet weld, 200 mm long.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out manual metal arc welding on components, including:
  - manufacturer specifications and procedures or equivalent documentation
  - Australian Standard 1554
- workplace procedures required to carry out manual metal arc welding on components, including:
  - preparing and operating welding equipment
  - non-destructive testing of completed welds
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment

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    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to carrying out manual metal arc welding on components, including procedures for:
    - selecting and using personal protective equipment (PPE) when working with MMAW equipment, including approved welding helmet
    - using specialist welding tools and equipment
    - using protective screens and fume extraction system
    - manually handling components and MMAW equipment
- identifying and controlling hazards, including:
    - arc eye and exposure to ultraviolet light
    - metal vapours, welding electrodes and welded components
    - molten metal spatter and fire danger
- environmental requirements relating to carrying out manual metal arc welding on components, including:
    - procedures for trapping, storing and disposing of waste materials
- distortion control techniques, including:
    - bracing
    - pre-setting
    - tacking
    - bolting
    - clamping
    - jigs and fixtures
- material preparation techniques, including characteristics of different metal types
- procedures for setting up and operating MMAW equipment
    - methods and techniques for MMAW, including:
    - weld specifications
    - basic welding symbols
    - types of welding electrodes and their application
    - identification of electrode classifications
    - protection of vehicle electronics
    - weld inspection
    - identification and rectification of weld defects
- procedures for final inspection and testing of welded components.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the MMAW that they have carried out, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required for MMAW
- components to be welded as specified in the performance evidence
- welding materials and consumables
- MMAW equipment and operating instructions
- tools, equipment and materials appropriate for carrying out MMAW.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to carry out advanced gas metal arc welding (GMAW) to replace structural and non-structural vehicle body sections during vehicle body repair work. It involves preparing for the task, selecting and using GMAW equipment, operating gas metal arc welder, selecting and using suitable personal protective equipment (PPE), and completing workplace processes and documentation.

The unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and prepare to carry out advanced GMAW	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret welding information 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for welding and establish serviceability according to workplace procedures
2. Weld using GMAW welder	2.1 Set up and make adjustments to welding equipment according to manufacturer specifications, workplace

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ELEMENTS	PERFORMANCE CRITERIA
	procedures, workplace health and safety and environmental requirements 2.2 Carry out welding test runs according to workplace procedures 2.3 Weld materials using GMAW process according to workplace procedures and required specifications
3. Check welds	3.1 Clean welds are according to workplace procedures 3.2 Carry out visual inspection and destructive testing and confirm weld quality and specifications 3.3 Identify weld defects and prepare for re-welding as required, notifying appropriate personnel
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm component is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Numeracy	• Identifies and sets gas metal arc welder settings • Identifies weld measurements from job requirements.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Problem solving	• Identifies defects, quality issues and potential problems associated with GMAW processes and refers problems to appropriate person.
Technology	• Uses specialist GMAW equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURVTW003 Carry out advanced gas metal arc welding on vehicle body sections.

Links

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Assessment Requirements for AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- use gas metal arc welding (GMAW) equipment to carry out the following welds:
  - a minimum of three butt welds to 0.8 mm and 1.2 mm panel steel in the following positions:
    - down hand
    - vertical
    - horizontal
  - a minimum of three lap welds to 0.8 mm and 1.2 mm panel steel in the following positions:
    - vertical
    - horizontal
  - a minimum of three plug welds to 0.8 mm and 1.2 mm panel steel in the following positions:
    - down hand
    - vertical
    - horizontal
  - a minimum of three butt welds on dissimilar material thickness 0.8 mm to 1.2 mm panel steel in the following positions:
    - down hand
    - horizontal.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out manual metal arc welding on components, including:

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  - Australian Standard 1554
  - manufacturer specifications and procedures or equivalent documentation
  - workplace procedures
- workplace procedures required to carry out manual metal arc welding on components, including:
  - preparing and operating welding equipment
  - non-destructive testing of completed welds
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to carrying out advanced GMAW on vehicle body sections, including procedures for:
  - selecting and using personal protective equipment (PPE) when working with GMAW equipment, including approved welding helmet
  - using specialist welding tools and equipment
  - using protective screens and fume extraction system
  - manually handling vehicle components and GMAW equipment
  - identifying and controlling hazards
- environmental requirements relating to carrying out advanced GMAW on vehicle body sections, including procedures for:
  - trapping, storing and disposing of waste materials
- GMAW equipment manufacturer operating procedures
- material and consumable preparation techniques, including characteristics of different metal types, including high strength steels (HSS)
- methods and techniques for advanced GMAW, including:
  - GMAW silicone bronze process
  - weld speed
  - weld angle
  - weld distance
  - welding positions
  - welding of dissimilar metal thicknesses
  - distortion control techniques
- GMAW testing, including:
  - non-destructive inspection
  - destructive testing
- identification and rectification of weld defects, including:

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  - porosity
  - lack of penetration
  - excessive weld build-up
  - excess heat
  - undercut
  - weld distortion
  - heat affected zone
- procedures for safeguarding vehicle electronics during GMAW
- post-weld inspection procedures.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the GMAW that they have carried out, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- GMAW equipment operating instructions
- PPE required for GMAW
- body sections specified in the performance evidence requiring GMAW
- protective screens and fume extraction system
- standard or inverter GMAW equipment
- tools, equipment, consumables and materials appropriate for carrying out advanced GMAW.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTW104 Carry out tungsten inert gas welding

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to carry out welding operations using tungsten inert gas (TIG) welding. It involves preparing for the task, selecting and using TIG welding equipment, setting gas flow pressures and welder settings, selecting and using suitable personal protective equipment (PPE), performing welding to given specifications, inspecting and testing weld quality, and completing workplace processes and documentation.

This unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and prepare to weld	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret welding information 1.3 Identify hazards associated with the work and manage risks 1.4 Select and check tools and equipment for serviceability 1.5 Prepare work area and plan work to carry out TIG welding, minimise waste, and use time efficiently
2. Weld materials using TIG welder	2.1 Prepare, set up and adjust TIG welding equipment for specific welding job requirement 2.2 Use TIG welding equipment according to manufacturer operating procedures and safety and environmental

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ELEMENTS	PERFORMANCE CRITERIA
	requirements 2.3 Conduct weld test runs according to workplace instructions and weld specifications 2.4 Weld materials using standard or inverter TIG process to industry standards
3. Check welds	3.1 Clean welds using required tools and techniques and according to workplace instructions 3.2 Check and confirm weld specifications and quality requirements by non-destructive inspection 3.3 Identify weld defects, prepare for re-welding as required, and notify required personnel
4. Complete work processes	4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Process workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Identifies and sets TIG welder settings • Identifies weld measurements from job requirements • Measures material from specifications.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Problem solving	• Identifies defects, quality issues and potential problems associated with TIG welding processes and refers problems to required person.
Technology	• Uses specialist TIG equipment.

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Unit Mapping Information

Supersedes and is equivalent to AURVTW004 Carry out gas tungsten inert gas welding.

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Assessment Requirements for AURVTW104 Carry out tungsten inert gas welding

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out tungsten inert gas (TIG) welding to each of the following material sections:
  - 150 mm long:
    - aluminium
    - steel
    - stainless steel
- in the course of the above work, utilise each of the following weld positions:
  - butt
  - outside corner
  - fillet
  - lap.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out tungsten inert gas welding, including:
  - manufacturer specifications and operating procedures or equivalent documentation
  - national standards and codes of practice for welding
- workplace procedures required to carry out tungsten inert gas welding, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment

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    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to carrying out TIG welding, including procedures for:
    - selecting and using personal protective equipment (PPE) for TIG welding, including approved welding helmets
    - using specialist welding tools and equipment
    - using protective screens and fume extraction system
    - manually handling vehicle components and TIG equipment
    - identifying and controlling hazards
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- different types of shielding gases used in TIG welding
- TIG manufacturer operating procedures
- material and consumable preparation techniques, including:
    - aluminium
    - steel
    - stainless steel
- procedures for setting up and operating TIG equipment, including:
    - standard and inverter TIG equipment
    - tungsten electrodes
    - protective screens and fume extraction system
    - shielding gas
    - filler rods
    - PPE, including approved welding helmets
- methods and techniques for TIG welding, including:
    - welding positions:
        - butt
        - outside corner
        - fillet
        - lap
    - weld distortion and distortion control techniques
    - TIG testing procedures, including procedures for visual or non-destructive weld testing
- procedures for identifying and rectifying weld defects, including:
    - lack of penetration
    - excessive weld build-up
    - excess heat
    - undercut
    - heat affected zone

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- procedures for protecting vehicle electronics during TIG welding
- procedures for final inspection of welded components.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to TIG welding that they have carried out, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- TIG equipment operating instructions
- PPE required for TIG welding
- protective screens and fume extraction system
- TIG welder and shielding gases
- TIG consumables
- materials specified in the performance evidence requiring TIG welding
- tools, equipment and materials appropriate for carrying out TIG welding.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AURVTW105 Carry out spot welding

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to carry out spot welding to replace structural and non-structural vehicle body sections according to original equipment manufacturer (OEM) or authorised agency procedures. It involves preparing for the task, selecting and using spot welding equipment, adjusting spot welder, operating spot welder, selecting and using suitable personal protective equipment (PPE), inspecting and testing weld quality, and completing workplace processes and documentation.

This unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for spot welding	1.1 Determine job requirements from workplace instructions 1.2 Access and interpret welding information 1.3 Select and inspect materials for repairs and replacements for quality 1.4 Identify hazards associated with the work and manage risks 1.5 Select and check tools and equipment for serviceability 1.6 Prepare work area and plan work to conduct and test spot welds, minimise waste, and use time efficiently
2. Carry out spot welding	2.1 Prepare surfaces for spot welding and apply anti-corrosion

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ELEMENTS	PERFORMANCE CRITERIA
activities	coatings prior to spot welding 2.2 Set up and adjust welding equipment for specific welding job requirement following OEM or authorised agency repair guidelines 2.3 Perform and destructive test sample spot welds 2.4 Carry out welding using welding equipment according to workplace procedures and safety and environmental requirements 2.5 Complete spot welding without causing damage to components or systems 2.6 Inspect completed spot welds for quality, and rectify identified faults as required according to workplace procedures
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Numeracy	• Identifies and sets welder settings.
Oral communication	• Clarifies instructions and procedures • Reports quality issues and job outcomes clearly.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses welding equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTW005 Carry out spot welding.

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Assessment Requirements for AURVTW105 Carry out spot welding

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out spot welding to at least three different structural and non-structural vehicle body sections that include 50 spot welds to each
- undertake above work according to original equipment manufacturer (OEM) or authorised agency procedures and cover different spot weld locations and spot weld sizes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out spot welding, including:
  - original equipment manufacturer or authorised agency repair specifications and procedures or equivalent documentation
- workplace procedures required to carry out spot welding, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- work health and safety (WHS) requirements relating to carrying out spot welding, including procedures for:
  - selecting and using personal protective equipment (PPE) for spot welding, including safety glasses
  - using specialist welding tools and equipment

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  - using protective screens
  - manually handling vehicle components and welding equipment
  - identifying and controlling hazards
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- OEM or authorised agency repair guidelines and quality requirements
- types of metals that can be spot welded
- types and key features of spot welding equipment covering:
  - set up
  - operation
- methods and techniques for spot welding, including spot welding principles:
  - squeeze time
  - weld time
  - hold time
- procedures for destructive testing of spot welds
- types of spot weld defects, including:
  - shunting
  - splashing
  - insufficient heat
- procedures for final inspection of welding work.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle spot welds that they have carried out, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- OEM or authorised agency repair guidelines
- PPE required for spot welding
- spot welder that meets current industry standard
- spot welding consumables
- materials requiring spot welding
- vehicle body sections or components that require the spot welding specified in the performance evidence
- tools, equipment and materials appropriate for carrying out spot welding.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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AURVTW109 Carry out basic gas metal arc welding

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Application

This unit describes the skills and knowledge required to prepare and weld components using the gas metal arc welding (GMAW) process. It involves preparing for the task, selecting and using GMAW equipment, inspecting and testing weld quality, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Vehicle Body Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to carry out basic GMAW welding	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret welding information 1.3 Identify hazards associated with the work, assess potential risks and implement control measures in line with workplace policies and procedures 1.4 Identify tools and equipment required for welding and establish serviceability according to workplace procedures
2. Weld component using GMAW	2.1 Set up welding equipment according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 2.2 Carry out welding according to workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Inspect welded component for conformity with job requirements
3. Complete work processes	3.1 Conduct final inspection according to workplace procedures and confirm component is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Locates required sources of information efficiently.
Oral communication	• Clarifies instructions and job requirements.
Numeracy	• Measures components to check conformity with job requirements • Interprets gauges and units of pressure.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses GMAW equipment.

Unit Mapping Information

Supersedes and is equivalent to AURVTW009 Carry out basic gas metal arc welding.

Links

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Assessment Requirements for AURVTW109 Carry out basic gas metal arc welding

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out gas metal arc welding (GMAW), including:
  - three butt welds, 150 mm long
  - three fillet welds, 150 mm long
  - three steel exhaust pipe butt welds.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to carry out gas metal arc welding on components, including:
  - manufacturer specifications and procedures or equivalent documentation
  - Australian Standard 1554
- workplace procedures required to carry out gas metal arc welding on components including:
  - preparing and operating welding equipment
  - non-destructive testing of completed welds
  - establishing the serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures

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- workplace health and safety (WHS) requirements relating to carrying out basic GMAW, including procedures for:
  - selecting and using personal protective equipment (PPE) when working with GMAW equipment, including approved welding helmet
  - using specialist welding tools and equipment
  - using protective screens and fume extraction system
  - manually handling components and GMAW equipment
  - identifying and controlling hazards, including:
    - arc eye and exposure to ultraviolet light
    - molten metal spatter and fire danger
- environmental requirements relating to carrying out basic GMAW, including procedures for:
  - trapping, storing and disposing of waste materials
- GMAW principles, including:
  - process of using an electric arc to melt and join metal
  - basic construction and operation of welding gun and wire feed unit
  - types and application of welding wire and shielding gases
  - properties and characteristics of metals to be welded
- types of welds, including:
  - butt welds
  - fillet welds
  - tee joints
  - corner joints
- procedures for protecting vehicle electronics during welding
- GMAW procedures, including:
  - component cleaning and preparation
  - welder current and voltage settings, gas flow rates, wire diameters and wire feed speed
  - wire stick out distance, gun angle between the work pieces and travel angle
- weld testing procedures, including non-destructive testing
- post-weld inspection procedures, including, weld defects.

Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the basic GMAW they have carried out on components, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required for GMAW, including approved welding helmet
- GMAW welder
- steel sections requiring GMAW as specified in the performance evidence
- tools, equipment and materials appropriate for carrying out basic GMAW.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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AUMABA012 Operate load shifting equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to safely use load shifting equipment.

It applies to those in a manufacturing environment and involves the application of skills and knowledge to select and use suitable load shifting equipment and perform pre-operational inspections to ensure its safe operation.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Support and Logistics

Elements and Performance Criteria

Elements Elements describe the essential outcomes	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Inspect load shifting equipment	1.1 Complete inspection of load shifting equipment according to workplace procedures 1.2 Identify load weights and volumes and receive confirmation from supervisor 1.3 Identify and document equipment faults and report to appropriate personnel
2. Lift, shift and place load	2.1 Identify load characteristics and handling requirements to select an appropriate shifting device 2.2 Plan shifting route, and identify and control potential hazards 2.3 Place load in specified locations without causing damage to property, machinery or equipment 2.4 Complete lift, shift and placement of load using approved work health and safety (WHS) methods and equipment,

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Elements	Performance Criteria
	according to workplace procedures
3. Complete load shifting operations	3.1 Complete post-inspection of load shifting equipment 3.2 Identify, tag and report faults 3.3 Store and secure load shifting equipment in accordance with workplace requirements 3.4 Complete load shifting documentation and maintenance records according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	• interpret load shifting equipment operating procedures and safety requirements • review load shifting equipment pre- and post-inspection schedules.
Writing skills to:	• legibly complete inspection schedules, maintenance reports and workplace documents.
Oral communication skills to:	• convey identified equipment faults to appropriate personnel • speak clearly and directly to inform others of loading and shifting requirements • communicate equipment operating instructions and load weights and volumes to co-workers.
Numeracy skills to:	• identify and where necessary estimate weights and volumes of objects to be shifted • identify numbers in metric and imperial units and measurements.
Planning and organising skills to:	• identify and prepare load shifting equipment and work area • identify overhead and ground level workplace hazards • conduct pre- and post-use inspection of equipment • complete workplace documentation.
Problem-solving skills to:	• identify load shifting equipment appropriate for the job • identify load shifting equipment faults and defects.
Teamwork skills to:	• advise co-workers of load shifting activities.

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Unit Mapping Information

Code and title current version	*Code and title previous version*	*Comments*	*Equivalence status*
AUMABA012 Operate load shifting equipment	AUMABA002 Operate load shifting equipment	Additions to Assessment Requirements due to rationalisation of Range of Conditions. Minor changes to ensure policy adherence.	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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Assessment Requirements for AUMABA012 Operate load shifting equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must have competently operated load shifting equipment on a minimum of two occasions, in the manner described in the Performance Criteria of this unit.

Individuals must demonstrate they can:

- conduct pre- and post-operational checks to load shifting equipment, including inspection of:
  - hydraulic and pneumatic leaks
  - lifting block
  - operation of control system
  - vehicle hazard warning light
  - wheels and tyres
  - wire rope, chains and lifting attachments
- comply with workplace procedures and relevant load shifting regulations, standards and codes of practice
- select and use load shifting equipment appropriate to weight and volume of load
- store and secure load shifting equipment appropriately
- complete load shifting equipment records.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- WHS requirements when operating load shifting equipment, including overhead and ground level workplace hazards
- types, application and operation of load shifting equipment, including:
  - overhead travelling crane
  - pallet truck
  - trolley jack

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- pre and post-use inspection procedures for load shifting equipment
- methods of determining load specifications, including weight, size and type
- methods of determining appropriate load shifting equipment for the circumstance
- load shifting equipment maintenance reports and schedules
- load shifting equipment storage procedures.

Assessment Conditions

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the operation of load-shifting equipment, e.g. load shifting equipment log books.

The following resources must be made available:

- manufacturing workplace or simulated workplace
- load shifting devices and equipment, including:
  - overhead travelling crane
  - pallet truck
  - trolley jack.
- workplace documentation relating to load shifting, including load shifting equipment inspection documentation
- load shifting equipment operating instructions and procedures relevant to a manufacturing environment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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AUMAFA001 Apply for jobs and undertake job interviews

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMAFA1001 Manage personal career goals

Application

This unit describes the performance outcomes required to prepare and apply for a job in a range of contexts.

It involves the application of skills and knowledge at secondary school level or above.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Competency Field

Manufacturing – Common

Unit Sector

Foundation Skills

Elements and Performance Criteria

Elements Elements describe the essential outcomes	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Gather and evaluate information on employment opportunities	1.1 Employment sources are identified and searched, and employment opportunities identified 1.2 Opportunities are reviewed and additional information obtained 1.3 Opportunities are clarified and graded according to own preferences, and a preferred opportunity is chosen

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Elements	Performance Criteria
2. Prepare and apply for a job	2.1 Selection criteria in job opportunity are reviewed 2.2 Own skills profile is analysed against selection criteria 2.3 Application for preferred job opportunity is prepared against criteria and checked for errors
3. Prepare a résumé	3.1 Résumé content is identified and prepared 3.2 Résumé is completed using an appropriate structure and format, and checked for errors
4. Prepare for and undertake a job interview	4.1 ***Preparation for job interview*** is undertaken 4.2 Potential interviews are rehearsed 4.3 Interview is undertaken
5. Review and evaluate interview performance	5.1 Feedback on performance in the interview is sought 5.2 Strengths and areas for improvement in the application and interview process are identified 5.3 Strategies for improving application and interview skills are identified

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Learning skills to:	• pose simple questions to help focus information search • use simple web searches to locate information • evaluate relevance of information on familiar subjects • develop a simple plan to achieve personal goals.
Reading skills to:	• interpret job application and understand job role description • check for errors in typed job application and résumé.
Writing skills to:	• complete a job application and a résumé.
Oral communication skills to:	• rehearse and undertake an interview for a job.
Numeracy skills to:	• interprets and uses times and dates • follows directions to get to interview location.
Digital literacy skills to:	• operate a computer to search employment databases and find information about an employer and job opportunity.
Planning and organising	• plan and rehearse an interview

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Skills	Description
skills to:	• arrive at interview on time wearing appropriate clothing and with relevant documentation.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Preparation for job interview must include:	• anticipating interview questions and planning suitable answers • clarifying the time and place of the interview • making sure personal presentation is appropriate • sourcing accurate information on the organisation and job position.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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Assessment Requirements for AUMAFA001 Apply for jobs and undertake job interviews

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMAFA1001 Manage personal career goals

Performance Evidence

Before competency can be determined, individuals must have competently prepared for and undertaken a job interview on a minimum of three occasions.

Individuals must demonstrate they can:

- find an appropriate job offer using an employment database
- complete a job application
- complete a résumé
- undertake and evaluate a job interview.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- methods of sourcing jobs
- methods of prioritising job options
- procedures for completing job applications, including procedures for completing selection criteria
- procedures for completing résumés, including using résumé templates in computer word-processing programs
- interview techniques and strategies for improving interview performance.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to job applications and job interviews, e.g. an employer’s letter advising of job application outcome.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- employment databases, including paper-based and internet
- computer with word-processing software that includes résumé templates.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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AUMAMM001 Influence and lead work groups in an automotive manufacturing workplace

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMAMM3001 Influence and lead work groups in an automotive manufacturing environment

Application

This unit describes the performance outcomes required to influence and lead work groups and resolve problems in an automotive manufacturing environment.

It involves the application of skills and knowledge at a specialist level.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Competency Field

Manufacturing - Common

Unit Sector

Management, Leadership and Supervision - Manufacture

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section

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Elements	Performance Criteria
1. Plan and determine work group task	1.1 ***Work instructions*** and work health and safety (WHS) requirements are identified 1.2 Current work processes are monitored for efficiency and effectiveness 1.3 Process methods necessary to complete a group task are planned 1.4 Responsibility for planning and completing components of the group task is assigned on an individual or shared basis
2. Participate in work group task	2.1 Communication methods appropriate to the group task are applied 2.2 Responsibility for quality and project timelines and proposed productivity outcomes are agreed 2.3 Assistance in completing the group task is sought from appropriate personnel as required 2.4 Problems are discussed and resolved according to workplace procedures
3. Monitor progress of work group task	3.1 Contribution of individual group members to work task progress is monitored 3.2 Feedback is provided to the work group on effectiveness of the group task 3.3 Ways of improving performance are proposed and agreed on

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	• interpret team key production indicators and production goals • interpret production requirements and meeting agendas • interpret work instructions.
Writing skills to:	• legibly enter information into manufacturing control documents • complete production control sheets and graphs • legibly complete safety, accident and incident reporting documents.
Oral communication skills to:	• actively participate in team decision making and team meetings • communicate and contribute to the structure of team tasks.

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Skills	Description
Numeracy skills to:	• read, interpret and prepare control sheets and charts • interpret team key production indicators and production goals.
Planning and Organising skills to:	• adapting to changing work conditions • manage time when planning, preparing and organising work priorities.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Work instructions must include***:***	• machine set-up procedures • operator instruction sheets (OIS) or workplace equivalent • preventative maintenance checklists • process control plans (PCPs) or workplace equivalent • standard operating procedures (SOPs) or workplace equivalent.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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Assessment Requirements for AUMAMM001 Influence and lead work groups in an automotive manufacturing workplace

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMAMM3001 Influence and lead work groups in an automotive manufacturing environment

Performance Evidence

Before competency can be determined, individuals must have competently participated in influencing and leading work groups on a minimum of three occasions.

Individuals must demonstrate they can:

- give and receive instructions relating to group task
- work and communicate effectively with others in an automotive manufacturing environment
- influence and lead work groups within scope of own authority to:
  - achieve production goals
  - achieve work quality goals
  - identify problems and apply problem-resolution techniques
- follow work instructions, workplace diversity, equal opportunity and conflict-resolution procedures
- respond constructively to changing work requirements
- show initiative in adapting to changing work conditions or contexts
- manage time when planning, preparing and organising work priorities.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- established workplace communication techniques, channels and protocols
- work health and safety (WHS) requirements relating to influencing and leading automotive manufacturing work groups
- workplace diversity, equal opportunity and conflict-resolution procedures when influencing and leading work groups
- quality systems and performance measures
- recording, reporting and maintenance procedures relating to influencing and leading automotive work groups.

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Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to activities related to leading work groups in an automotive manufacturing environment.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive manufacturing workplace or simulated workplace
- work instructions
- workplace conflict-resolution, diversity and equal opportunity procedures that inform work involving influencing and leading automotive manufacturing work groups.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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AUMAQA001 Apply quality assurance techniques

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMAQA4001 Apply quality assurance techniques
Release 2	Amendments made to the unit to include OHS requirements. Reference to SNR updated to NVR in Assessment Conditions to reflect new Standards for Registered Training Organisations.

Application

This unit describes the performance outcomes required to apply quality assurance techniques required in an automotive manufacturing environment.

It involves the application of skills and knowledge during the design, development and production of automotive plant, tools, equipment and systems at a production worker level.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Competency Field

Manufacturing - Common

Unit Sector

Quality

Elements and Performance Criteria

Elements Elements describe the essential outcomes	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Interpret and apply workplace quality	1.1 ***Instructions*** and plans are interpreted to identify processes and materials to complete work tasks

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Elements	Performance Criteria
standards	1.2 Workplace quality standards are interpreted and applied to work tasks 1.3 Process improvement tools are used either individually or in a team to identify design, development and production quality problems
2. Monitor and report on quality	2.1 Finished materials and products are checked for quality against workplace quality standards and according to ***workplace procedures*** 2.2 Non-conforming materials and products are identified and reported 2.3 Quality problems are analysed to identify the root cause using analytical tools 2.4 Strategies to improve quality are developed and recommended according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	• identify and review quality improvement plans • interpret instructions and plans, relevant legislation, regulations, standards, codes of practice, safe work practices and workplace procedures.
Writing skills to:	• legibly record and report quality improvement progress.
Oral communication skills to:	• communicate between production and quality team members • discuss quality improvement plans with team leader and clarify quality assurance requirements.
Numeracy skills to:	• use analytical tools, instructions and plans • calculate materials to complete work tasks.
Digital literacy skills to:	• use computers and computer software, such as email, databases, spreadsheets and word processing.
Teamwork skills to:	• work effectively with diverse team members.

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Range of Conditions

and occupational health and safety (OHS) This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Instructions must include:	• engineering specifications and drawings • operator instruction systems (OIS) or workplace equivalent • process control plans (PCPs) or workplace equivalent • standard operating procedures (SOPs) or workplace equivalent.
Workplace procedures must include:	• quality standards • use of tools and equipment • work health and safety (WHS) and occupational health and safety (OHS) requirements • workplace recording and reporting.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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Assessment Requirements for AUMAQA001 Apply quality assurance techniques

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMAQA4001 Apply quality assurance techniques
Release 2	Amendments made to the unit to include OHS requirements. Reference to SNR updated to NVR in Assessment Conditions to reflect new Standards for Registered Training Organisations.

Performance Evidence

Before competency can be determined, individuals must have competently applied quality standards on a minimum of three occasions.

Individuals must demonstrate they can:

- comply with workplace production standards and quality assurance techniques
- apply workplace procedures relating to quality assurance techniques
- communicate effectively with team leaders and team members to ensure quality assurance
- document quality improvement activity and techniques
- complete quality improvement reports.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- quality processes
- workplace procedures relating to quality assurance techniques
- process improvement tools
- processes and procedures for implementing quality improvement activities, including:
  - processes and required resources from a quality improvement plan
  - identifying and allocating tasks from the quality improvement plan
  - recording and reporting procedures for monitoring progress of quality improvement plan activities
- types, layout and application of quality improvement activity reports.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the application of quality assurance techniques.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive manufacturing workplace or simulated workplace
- tools, equipment and machinery required when producing motor vehicles
- workplace procedures relating to quality assurance techniques
- quality improvement plan
- process control plans (PCPs) or workplace equivalent.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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AUMGTG001 Install fixed and moveable glass components on vehicles

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMGTG3001 Install fixed and moveable glass components
Release 2	Updated for clarity and policy adherence

Application

This unit describes the performance outcomes required to cut, prepare and install fixed and moveable glass components on vehicles.

It applies to those in an automotive manufacturing environment and involves the application of skills and knowledge at a production worker level.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical - Glazing

Elements and Performance Criteria

Elements Elements describe the essential outcomes	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Plan and prepare for work	1.1 Identify job specifications from work orders and work instructions 1.2 Identify relevant workplace procedures 1.3 Select materials to meet work requirements and job specifications
2. Fabricate templates, mark and cut glass	2.1 Fabricate templates to meet job specifications

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Elements	Performance Criteria
openings	2.2 Use templates to mark and cut glass opening using workplace methods and equipment 2.3 Prepare vehicle panels and trims for installing glass components
3. Install glass components	3.1 Identify and select adhesives or glass retaining systems according to work order and job specification 3.2 Install glass components according to vehicle manufacturer specifications 3.3 Check installed glass components against specifications and leak testing, taking corrective action as required
4. Complete work processes	4.1 Clean work area, disposing of recycling materials according to workplace procedures 4.2 Check, clean and maintain tools and equipment, and store according to workplace procedures 4.3 Complete workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	• interpret job specifications and work instructions • identify work health and safety (WHS) requirements from workplace procedures • interpret operating procedures of tools and equipment • identify work orders.
Writing skills to:	• complete job sheets relating to installation.
Numeracy skills to:	• identify, mark out and measure glass components and templates according to specifications • use measuring equipment.

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**

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Code and title current version	Code and title previous version	Comments	Equivalence status
AUMGTG001 Install fixed and moveable glass components on vehicles (Release 2)	AUMGTG001 Install fixed and moveable glass components on vehicles (Release 1)	Minor updates to Assessment Requirements. Performance Criteria changed from passive to active voice. Rationalisation of Range of Conditions.	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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AUMGTG001 Install fixed and moveable glass components on vehicles

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMGTG3001 Install fixed and moveable glass components
Release 2	Updated for clarity and policy adherence

Performance Evidence

Before competency can be determined, individuals must have competently installed glass components on vehicles on a minimum of two occasions.

Individuals must demonstrate they can:

- interpret job information
- mark out and fabricate templates for glass components
- select appropriate glass sealants, adhesives, tools and equipment
- prepare, install and adjust fixed and moveable glass components according to workplace procedures and work health and safety (WHS) requirements, including:
  - vehicle protection measures
  - personal protective equipment – safety glasses, gloves and coveralls
- leak test installed glass components
- check, clean and maintain tools and equipment, and store appropriately
- clean and recycle appropriate material
- complete workplace documentation relating to installation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- workplace procedures and WHS requirements relating to installing fixed and moveable glass components on vehicles
- workplace quality guidelines for installing glass components in vehicles
- work documentation covering procedures, specifications, schedules and work plans
- template measuring and marking out procedures
- cutting procedures for vehicle panels and trim

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- installation procedures for fixed, bonded and moveable glass components
- urethane, rubber and butyl installation methods
- bonded glass installation methods.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles on which they have worked, e.g. work sheets.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive manufacturing workplace or simulated workplace
- tools and equipment required for installing glass components
- automotive vehicle or simulated frame for glass installation
- materials to produce templates for glass components
- fixed and movable glass components
- work orders and job specifications
- WHS requirements for installing glass components on vehicles, including:
  - vehicle protection equipment
  - personal protective equipment, including safety glasses, gloves and coveralls
- workplace procedures to install fixed and moveable glass components on vehicles
- workplace documentation relating to installing glass components on vehicles, including:
  - customer details
  - glass warranty information
  - work sheets.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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AUMGTS004 Fabricate parts for vehicle sub-assemblies

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMGTS3004 Fabricate parts for sub-assemblies

Application

This unit describes the performance outcomes required to produce, finish and test parts and components for vehicle sub-assemblies.

It applies to those in an automotive manufacturing environment and involves the application of skills and knowledge at a production worker level.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Competency Field

Manufacturing - Bus, Truck and Trailer

Unit Sector

Technical - Fabrication

Elements and Performance Criteria

Elements Elements describe the essential outcomes	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Plan and prepare	1.1 Work orders, job specifications and drawings are identified and confirmed 1.2 Tools, equipment and materials are identified, selected and prepared according to work order and job specification 1.3 Materials are inspected for quality, and defects identified and reported

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Elements	Performance Criteria
	1.4 Welding equipment is selected, inspected, tested and adjusted according to job requirements
2. Weld components	2.1 Components are welded as identified in working drawings according to ***workplace procedures***
	2.2 Welds are completed to workplace ***quality standards*** and weld specifications
	2.3 Welded parts are checked against job specifications
	2.4 Weld faults are identified and rectified according to workplace procedures
3. Assemble and finish sub-assemblies	3.1 Sub-assemblies are completed and checked against job specification
	3.2 Sub-assembly fasteners are tensioned to specifications
	3.3 Seals, adhesives and sealants are applied to ensure joints are leak free
4. Complete work processes	4.1 Final inspections are made and faulty sub-assemblies are reworked in line with workplace procedures
	4.2 Tools, equipment and work areas are cleaned, maintained, and inspected according to workplace procedures
	4.3 Waste material is collected and recycled or disposed of according to workplace procedures
	4.4 Faulty equipment is identified, tagged and reported according to workplace procedures
	4.5 Work job sheets are completed and reported to supervisor

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	• interpret workplace procedures, work health and safety (WHS) requirements, work orders, job specifications and drawings • interpret equipment operating procedures and work instructions.
Numeracy skills to:	• identify part numbers and quantities • interpret job specification measurements • set welding equipment • use measuring equipment.
Writing skills to:	• complete faulty equipment tags

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	• legibly complete production documents.
Oral communication skills to:	• inform team members of suitable fabrication sequence and methods.
Planning and organising skills to:	• select and prepare equipment, materials and work area • fabricate parts for sub-assemblies within required timelines.
Problem-solving skills to:	• access, interpret and apply work orders and work instructions.
Teamwork skills to:	• work as part of a production team.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Workplace procedures must include:	• procedures for recording and reporting the fabrication of parts for vehicle sub-assemblies • use of tools and equipment for fabricating parts for vehicle sub-assemblies • WHS requirements for fabricating parts for vehicle sub-assemblies • workplace quality standards relevant to fabricating parts for vehicle sub-assemblies.
Quality standards must include:	• component fit and finish of fabricated parts for vehicle sub-assemblies • weld quality of fabricated parts for vehicle sub-assemblies.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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Assessment Requirements for AUMGTS004 Fabricate parts for vehicle sub-assemblies

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMGTS3004 Fabricate parts for sub-assemblies

Performance Evidence

Before competency can be determined, individuals must have competently fabricated parts for sub-assemblies on a minimum of two occasions.

Individuals must demonstrate they can:

- locate, interpret and apply fabrication information and specifications
- use tools, equipment and welding equipment safely
- fabricate parts for sub-assemblies according to workplace procedures and work health and safety (WHS) requirements
- follow work instructions and production schedules when fabricating parts for vehicle sub-assemblies
- use inspection and checking processes and identify faulty parts of vehicle sub-assemblies.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- WHS requirements relevant to fabricating vehicle sub-assemblies
- types of vehicle sub-assemblies and their components
- original equipment manufacturer operating procedures
- component fabrication alignment procedures
- welding types and techniques for fabricating vehicle sub-assemblies
- assembly procedures of vehicle sub-assemblies.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle sub-assemblies that they have fabricated, e.g. production work sheets.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive manufacturing workplace or simulated workplace
- work instructions for fabricating vehicle sub-assemblies
- vehicle sub-assembly components
- vehicle sub-assembly specifications
- tools, equipment and welding equipment relevant to fabricating vehicle sub-assemblies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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AUMGTY002 Install vehicle components

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMGTY3002 Mount and install assembled component to chassis or frame

Application

This unit describes the performance outcomes required to mount and install assembled components to a chassis or frame (e.g. vehicle cabin, sleeper or vehicle bodies).

It applies to those in an automotive and related component manufacturing environment and involves the application of skills and knowledge at a specialist level.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Competency Field

Manufacturing - Bus, Truck and Trailer

Unit Sector

Technical - Chassis and Frame

Elements and Performance Criteria

Elements Elements describe the essential outcomes	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Plan and prepare	1.1 Hand ***tools and equipment*** are selected and inspected, and faults repaired or reported 1.2 Appropriate lifting equipment is selected and checked for safe operation 1.3 Fasteners are identified from job specifications 1.4 Job ***information*** and working drawings are identified,

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Elements	Performance Criteria
	interpreted and confirmed
2. Position and tension components	2.1 **W*orkplace procedures*** are identified and followed 2.2 Components are matched, positioned and secured according to work instruction and component specifications 2.3 Fasteners are tensioned to specification 2.4 Components are inspected for alignment and quality according to work order and workplace quality standards
3. Hook up systems	3.1 Component service lines are hooked up according to drawings and component specifications 3.2 Completed hook-up is checked against job specifications, and then tested and inspected for quality and operation
4. Complete work processes	4.1 Work area and equipment are cleaned, inspected and maintained according to workplace procedures 4.2 Faulty equipment is identified, tagged and reported 4.3 Work sheets and production schedule are completed and given to appropriate personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	• identify workplace procedures and work health and safety (WHS) requirements • interpret job instructions, working drawings, original equipment manufacturer (OEM) guides and, if applicable, requirements of Vehicle Standards Bulletin 6 (VSB6) National Code of Practice – Heavy Vehicle Modifications • interpret component specifications • identify installation sequences • identify work sheets and inspection forms.
Writing skills to:	• complete production schedules, equipment maintenance forms and faulty equipment tags • prepare sequence work plans.
Numeracy skills to:	• identify drawing and component specifications • use measuring equipment • identify fastener quantities and tension specifications.

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Planning and organising skills to:	• select and prepare components, equipment and work area.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include:	• hand and power tools • lifting equipment • vehicle protection equipment.
Information must include:	• component and service line specifications • component assembly instructions • customer requirements • manufacturer specifications and guides • VSB6 • work orders and job specifications • workplace procedures and instructions.
Workplace procedures must include:	• equipment operations • quality standards • recording and reporting • WHS requirements • work instructions.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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Assessment Requirements for AUMGTY002 Install vehicle components

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMGTY3002 Mount and install assembled component to chassis or frame

Performance Evidence

Before competency can be determined, individuals must have competently installed vehicle components on a minimum of two occasions.

Individuals must demonstrate they can:

- mount and install assembled components and service lines to a chassis or frame according to workplace procedures and work health and safety (WHS) requirements
- follow job specifications and work instructions when installing vehicle components
- identify materials lists, working drawings and production requirements
- select components for installation
- select and use tools and equipment for installing vehicle components
- complete workplace documentation relating to installing vehicle components
- apply manual-handling techniques relating to installing vehicle components.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- workplace procedures and WHS requirements relating to installing vehicle components, including safe use of vehicle component installation equipment
- quality standards relating to installing vehicle components
- manufacturing procedures and vehicle component specifications
- material-handling techniques for installing vehicle components
- work sheets and production schedule documentation relating to installing vehicle components
- vehicle components
- procedures for operating lifting equipment required to install vehicle components.

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Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles on which they have worked, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive manufacturing workplace or simulated workplace
- working drawings and component specifications for installation
- original equipment manufacturer (OEM) installation guides
- service line fasteners and assembled components
- tools and equipment required to install vehicle components
- personal protective clothing and equipment relating to work requirements
- Vehicle Standards Bulleting 6 (VSB6) National Code of Practice – Heavy Vehicle Modifications
- workplace procedures for installing vehicle components
- lifting equipment required to install vehicle components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1

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AURAAA001 Work in an automotive administration role

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to understand the structure and culture of an automotive administration environment as well as the expectations of one's own role, and apply that understanding to own administrative activities. It involves meeting own role requirements, managing daily work activities in a safe and efficient manner, contributing to team activities in a productive automotive administration workplace, and identifying own professional development needs.

It applies to those working in an automotive administration role.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Administration

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Meet automotive administration employment requirements	1.1 Structure of automotive industry sector and relevant associations, occupations and job roles are identified 1.2 Company business requirements are interpreted and work conditions identified 1.3 Company organisational structure, and roles and responsibilities of team members and team leader, are identified 1.4 Own work role, personal responsibilities and accountabilities are clarified 1.5 Lines of authority and reporting requirements are identified and followed 1.6 Company expectations and requirements, including client focus and privacy and confidentiality requirements, are identified and followed
2. Manage daily work activities	2.1 Individual tasks are prioritised and completed according to work schedule, company standards, workplace procedures and team expectations, and within required timeframes 2.2 Assistance is sought from team leader when difficulties arise in achieving allocated tasks 2.3 Changes are made to workload or work priorities as required 2.4 Own work is monitored and adjusted according to feedback from supervisors
3. Maintain a safe environment	3.1 ***Safety requirements*** are identified and followed 3.2 Personal work space is kept in a clean, organised and safe condition according to workplace procedures 3.3 Potential hazards and hazardous practices are identified and reported to appropriate persons
4. Contribute to a productive team environment	4.1 Information and instructions relevant to team activities are identified and shared with team members to ensure work goals are met 4.2 Individual contributions to team activities are clarified and confirmed with team members 4.3 Assistance is provided to team members and constructive feedback is provided and encouraged 4.4 Improvements to work activities and variations in the quality of components and work practices are noted and reported to team leader according to workplace procedures 4.5 Causes of disharmony and other barriers to achievement are referred to team leader for resolution

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
5. Identify own development needs	5.1 Personal skills are assessed to identify strengths and improvement opportunities, and are matched against job role and company requirements 5.2 Personal goals are determined and potential automotive career path options explored and matched against personal goals 5.3 Steps are taken, in consultation with team leader or manager, to identify own learning needs for future work requirements 5.4 Opportunities to learn and develop required skills and knowledge for future automotive industry work are identified and acted on as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• interpret textual and numerical information in product or service documentation.
Writing skills to:	• legibly and accurately enter information into workplace schedules, forms and databases.
Oral communication skills to:	• participate in verbal exchanges using active listening and questioning techniques.
Numeracy skills to:	• estimate and calculate timeframes to manage work schedules.
Digital literacy skills to:	• use digital systems and tools to communicate with others • access, organise and present information.
Technology skills to:	• use office equipment to complete work schedules.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • selecting and using personal protective equipment (PPE) • following ergonomic work practices • using correct manual handling procedures when moving workplace items.

Unit Mapping Information

Equivalent to AURAAA2001 Work in an automotive administration environment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAAA001 Work in an automotive administration role

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- complete assigned administrative work activities in an automotive administration workplace or a simulated environment on three occasions doing different administrative activities within commercially realistic timeframes
- prepare one daily and one weekly individual work plan or schedule outlining own administrative duties and highlighting the interactions with other team members or activities
- prepare a personal learning and development plan.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to working in an automotive administration workplace, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - following ergonomic work practices
  - using correct manual handling procedures when moving workplace items
- structure of relevant automotive industry sector, and roles of the key industry associations, regulatory bodies, occupations and job roles
- typical administrative duties in the relevant automotive industry sector
- key features of relevant industrial awards, workplace agreements, and trainee or apprentice agreements
- company expectations and requirements, including:
  - working hours, work ethic and presentation standards
  - authority and reporting lines

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    - automotive terminology relating to work activity
    - privacy and confidentiality
    - client and customer service ethos
- own job role and accountabilities, including:
    - position description
    - reporting and supervisory arrangements
    - role within team or work group
- techniques for prioritising own work
- methods for documenting work schedules or action plans
- features of effective teams, including:
    - composition of work groups or teams
    - roles and responsibilities of members
    - group dynamics
    - impact of working effectively with others on individual and group performance
    - meeting and reporting procedures
- communication techniques for obtaining and clarifying information and instructions, including:
    - active listening
    - questioning techniques
    - conflict resolution techniques
- methods for obtaining and giving feedback, including:
    - formal and informal performance appraisal methods
    - verbal and non-verbal communication techniques
    - techniques for supporting team members
- personal learning and development, including:
    - techniques for assessing own strengths and opportunities for improvement
    - goal setting methods and techniques
    - sources of information on learning opportunities
- formats for documenting personal learning and development plans.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the assigned administrative work activities they have completed in an automotive workplace, e.g. an individual work plan, or a personal learning and development plan.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive administration workplace or simulated workplace
- team members
- workplace procedures relating to administrative processes
- individual work space and office equipment and technology to complete administrative duties
- sources of information relating to learning opportunities in the automotive industry.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAAA002 Determine retail rates for automotive products and services

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to calculate fixed and variable costs to determine retail labour rates and cost of products and services for sale in automotive service and repair workplaces.

It applies to those working in administrative and sales areas of an automotive workplace who are required to calculate costs of products and services to ensure business profitability.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Administration

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Determine fixed costs	1.1 Fixed cost components are identified and classified into

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	categories 1.2 Past records and business requirements are used to estimate fixed costs for next period 1.3 Fixed administrative and business operation overhead costs are calculated 1.4 Proportion of fixed costs to be included in retail rates is determined
2. Determine labour rate	2.1 Cost components of labour are identified and classified into categories 2.2 Average charge per hour for each identified category is calculated 2.3 Cost component of subcontractors used on jobs is determined and included in calculations for relevant jobs 2.4 ***Hourly labour rates*** are calculated according to workplace procedures
3. Determine variable costs	3.1 Variable costs are identified and calculated using data obtained from accounting records or supplier information 3.2 Required materials are estimated and recorded
4. Determine retail price of products and services	4.1 ***Previous sales figures*** and trends in turnover volume are reviewed 4.2 Competitors' price for similar products or services is researched and reflected in final retail rate 4.3 Retail prices, margins and mark-ups for each product or service category are finalised according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• access and research pricing information in order to cost products and services.
Writing skills to:	• legibly and accurately enter data and record information in workplace documentation • prepare quotations and reports based on pricing and costing of

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Skills	Description
	products and services.
Numeracy skills to:	• perform mathematical operations, including, addition, subtraction, multiplication, division, percentages and fractions, relating to quantity and time • use mathematical ideas and techniques to calculate fixed and variable costs, labour rates, and profit margins.
Digital literacy skills to:	• use digital systems and software to access, filter, extract and organise information in order to determine costs and retail rates of work, including spreadsheets and databases.
Self-management skills to:	• follow workplace procedures and prepare retail rates and price information within workplace timeframes.
Problem solving skills to:	• determine pricing to meet workplace requirements relating to profitability and break even points.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Hourly labour rates must include:	• provision for:
	  • fixed costs
	  • on costs.

Previous sales figures must include:	• wholesale cost of product or service • retail price of product or service.

Unit Mapping Information

Equivalent to AURAAA4002 Determine retail rates for work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAAA002 Determine retail rates for automotive products and services

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- research and compare costs from external suppliers and competitors for:
  - two automotive workplace services
  - one consumable item
  - one automotive accessory product
- calculate retail rates for above products and services.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- basic accounting principles and practices relating to costings:
  - Goods and Services Tax (GST) calculations
  - mark-up, break even and profit calculations
  - simple and compound interest
  - inflation effects
  - straight line depreciation
- factors impacting on pricing products and services:
  - overheads, including accommodation costs, utilities, depreciation, insurances, licences and other business charges
  - labour costs, including on costs covering leave provision, superannuation, training and workers' compensation
  - actual employee chargeable hours
- sources of information on prices and costs:

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  - supplier or component price lists
  - accounting records
  - labour or payroll records
  - purchasing records
  - repair orders and job cards
  - standard repair and warranty times
- key features of workplace software and technology relating to extracting and manipulating data and information.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to determining retail rates for automotive products and services, e.g. itemised calculation of retail rate.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- range of information and data relating to product and service costs, including supplier price lists, workplace sales and service data, financial data and payroll records
- calculator, computer hardware and software, and general office equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURACA001 Respond to customer needs and enquiries in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify customer needs and enquiries, and provide effective information and advice when supplying automotive products and services.

It applies to those working in an automotive workplace.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Sales and Marketing

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify customer need or enquiry regarding	1.1 Customer is greeted according to workplace procedures and customer service standards

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
product or service	1.2 Customer requirement relating to specific product or service is identified and ***clarified*** 1.3 Referrals to appropriate personnel are provided where customer need or enquiry is outside scope of own responsibility or authority
2. Provide information and advice to customer	2.1 ***Information*** that addresses customer need or enquiry is provided in a timely, efficient and courteous manner to build a positive relationship and customer loyalty 2.2 Questions are asked to confirm that information satisfies customer need or enquiry 2.3 Outstanding customer requirements are identified and promptly addressed in a courteous and discreet manner, or are referred to appropriate personnel
3. Finalise customer contact	3.1 Customer feedback about product or service is sought and recorded as required according to workplace procedures 3.2 Required follow-up action is completed effectively according to workplace procedures and timeframes 3.3 Customer complaints or dissatisfaction are addressed or escalated to appropriate personnel as required 3.4 Interaction with customer is concluded in line with workplace procedures and customer service standards

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Writing skills to:	• legibly and accurately fill out workplace documentation • provide information or record customer requirements in relevant forms or documentation.
Oral communication skills to:	• speak clearly to be understood, using appropriate automotive workplace terms • use appropriate visual gestures to assist customer understanding • listen effectively, giving feedback to customer to confirm clear

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Skills	Description
	understanding.
Planning and organising skills to:	• set and monitor timeframes or schedules relating to customer service.
Problem solving skills to:	• identify own role and responsibilities in the workplace • follow workplace procedures for responding to customer enquiries.
Technology skills to:	• operate telephone systems and other communication equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Clarification must include**:**	• open and closed questioning • active listening.
Information must include:	• explaining features and benefits of workplace product or service using clear, jargon-free language • discussing alternative product or service where appropriate • recommending product or service suitable to customer requirements.

Unit Mapping Information

Equivalent to AURACA2001 Establish relations with customers

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURACA001 Respond to customer needs and enquiries in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- identify needs or enquiries of three different customers with different requirements, including one dissatisfied customer
- provide advice or information on automotive products and services to above customers.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- techniques for assisting customers, including:
  - effective questioning
  - active listening
  - building rapport
  - explaining clear options
  - making recommendations
  - finalising contact
- customer service standards and practices relevant to automotive workplaces, including:
  - greeting and farewelling customers
  - recording customer requirements and enquiries
  - customer service delivery standards
  - contact and follow-up procedures
- indicators of customer dissatisfaction, including verbal and non-verbal cues
- techniques for resolving customer problems, including procedures for complaint escalation

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- key legal requirements relating to customer rights as a consumer, and business obligations under Australian Consumer Law (ACL)
- procedures for making referrals relating to:
  - customer dissatisfaction
  - suppliers of other products and services
- key features and benefits of workplace-specific products and services
- techniques for undertaking basic calculations to provide information to customers relating to quantities, timeframes, and delivery of automotive products and services.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having responded to customer needs and enquiries, e.g. complaints register.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following must be made available:

- automotive workplace or simulated workplace
- three different customers with different requirements, including one dissatisfied customer.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURACA002 Manage complex customer requirements in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to manage and assist customers with complex automotive industry product or service requirements. It involves confirming customer needs, suggesting options and providing costs, and determining a course of action for customers with complex requirements.

It applies to those working in customer service sales and administrative roles in an automotive workplace.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Sales and Marketing

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Confirm customer requirements	1.1 Collaborative techniques, including active listening and questioning, are used to elicit, clarify and confirm customer requirements 1.2 Customer requirements are clearly and legibly documented according to workplace procedures and organisational legal requirements 1.3 Customer acknowledgement and confirmation of the documented requirements are obtained
2. Advise customer of available options	2.1 Viable options are generated in response to customer needs and workplace legal requirements according to workplace procedures 2.2 Further information is researched as required to confirm or clarify options 2.3 ***Options*** are explained and discussed with customer to assist informed decision making 2.4 Supporting information is provided as required to assist customer understanding 2.5 Sales or service conditions are communicated verbally or in writing according to workplace procedures
3. Agree action plan with customer	3.1 Customer's preferred option is detailed and ***documented in action plan*** 3.2 Customer commitment to agreed action plan is gained according to workplace procedures 3.3 Assistance in completing relevant documentation is provided to customers as required 3.4 Customer feedback is sought on services provided

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• use customer feedback and experience to inform future options and customer dealings.

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Skills	Description
Reading skills to:	• interpret sales or service conditions relating to workplace products and services • research and review information about product and service options that meet customer needs.
Writing skills to:	• legibly and accurately complete workplace action plans, quotations and documentation outlining customer requirements and options.
Oral communication skills to:	• summarise and present key information in presenting options to customers • relate to people from diverse backgrounds using clear language and tone, and unambiguous terminology.
Numeracy skills to:	• use mathematical operations, including addition, subtraction, multiplication, division, and percentages, to determine price and timeframes suitable to customer options.

Digital literacy skills to:	• use digital systems and tools to:
	  • communicate with others
	  • access, search and retrieve information relating to products and services.

Planning and organising skills to:	• use a planned approach to sequence and schedule customer requirements in the action plan.
Problem solving skills to:	• develop solutions unique to a customer and their issue • use conflict resolution techniques to avoid escalation of issues.
Technology skills to:	• use office equipment to prepare written information and to communicate with customers and suppliers via a range of channels.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Options must include:	• benefits • timeframes • approximate costs.
Documented action plan must include:	• agreed delivery timeframe • agreed cost.

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Unit Mapping Information

Equivalent to AURACA3002 Establish customer requirements of a complex nature

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURACA002 Manage complex customer requirements in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- develop an action plan for three different customers with different complex requirements relating to automotive products or services, which must include:
  - costing details
  - quotation.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- negotiation, communication and problem-solving techniques, including:
  - active listening
  - questioning techniques
  - interpreting body language
  - negotiating or closing a deal
- types of complex customer requirements relating to:
  - cost requirements
  - warranty requirements
  - customised, bespoke, or unusual requirements
  - special timeframes
  - availability of parts or components
  - requirements of special or important customers
  - complex technical problems
  - matters involving more than one solution or area of service

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  - needs of customers dissatisfied with previously provided product or service
  - complex financial or insurance arrangements
- key legal requirements relating to customer rights as a consumer, and business obligations under Australian Consumer Law (ACL), including:
  - anti-discrimination
  - equal opportunity
  - privacy and confidentiality
  - consumer protection and rights
  - freedom of information
- industry codes of practice and ethical principles, including duty of care and consumer access to appeal processes
- workplace policies and procedures relating to:
  - customer service
  - feedback and complaints handling
  - quality requirements
  - documentation and recording procedures
- detailed automotive product and service knowledge relevant to workplace, manufacturers or suppliers
- sources of additional information about automotive products and services, including:
  - manufacturers and suppliers
  - internet and social media
  - competitors.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having managed complex customer issues in an automotive workplace, e.g. complaints register.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive workplace or simulated workplace
- workplace procedures relating to customer service
- three different customers with different complex requirements
- commercially realistic workplace with manufacturer and/or supplier product or service information
- computer hardware and software and general office equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURACA003 Build customer relations in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to maintain a customer database, monitor existing customer service processes and operations, and identify opportunities to value add to customer experiences in an automotive workplace.

It applies to those working in the automotive vehicle or component sales and service environment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Sales and Marketing

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Maintain customer	1.1 Information relating to new customers is uploaded regularly to

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Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
database	database according to workplace procedures 1.2 Information relating to existing customers is regularly updated to maintain relevance and currency of database 1.3 Information relating to customers and their sales and service history is accessed and analysed
2. Determine customer value-adding opportunities	2.1 Customer needs and value-adding opportunities are regularly monitored via information accessible on the company database and through informal channels 2.2 Current automotive products and services are assessed against customer needs 2.3 Trends in customer service needs and value-adding opportunities are documented and reported to supervisor
3. Contribute to workplace business operations	3.1 Customer service operations are reviewed with supervisor to check alignment with current customer service requirements 3.2 Recommendations for changes to customer service operations are made following consultation with supervisor

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	• interpret textual and numerical information in automotive product and service documentation.
Writing skills to:	• logically structure customer service reports using accurate data and correct spelling and grammar.
Oral communication skills to:	• clearly explain customer needs and product and service information.
Numeracy skills to:	• interpret numerical information relating to percentages and trends over time in workplace databases, charts and documentation.
Problem solving skills to:	• interpret information and recommend improvements to customer service.
Technology skills to:	• operate workplace business technology to prepare reports and

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Skills	Description
	information obtained from workplace database.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURACA3003 Build customer relations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURACA003 Build customer relations in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- update and maintain a customer database according to workplace procedures
- provide a report that shows evidence of monitoring and reviewing information relating to customer needs and value-adding opportunities
- provide evidence of conducting one of the following activities to address customer service standards and requirements:
  - staff or team meeting
  - staff or team training session
  - staff or team information session
  - staff or team member feedback or review.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- procedures for using workplace databases, including:
  - accessing database and entering data
  - retrieving data
  - analysing data, including basic statistical processes, including mean, median and mode
  - presenting data, including tables and graphs
- customer service principles and practices relevant to automotive workplaces, including:
  - recording customer requirements and enquiries
  - contact and follow-up procedures
  - feedback and complaints handling, including feedback surveys

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- techniques for value adding to customer services, including creating positive consumer experiences through customer-centred approaches
- procedures for comparing actual customer service operations against expected operations.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to customer relationship building activities in an automotive workplace, e.g. customer feedback surveys.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources should be made available:

- automotive workplace or simulated workplace
- office equipment, computer and database software
- customer database containing customer information and data
- workplace procedures relating to customer service and use of database.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAEA001 Identify environmental and sustainability requirements in an automotive service or repair workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify environmental and sustainability requirements in an automotive service or repair workplace. It involves identifying direct hazards to the environment from the service and repair of vehicles, as well as identifying sustainability practices that may reduce the environmental impact of work practices and outputs.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Environment

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify methods of controlling hazards to stormwater and wastewater drainage systems	1.1 Storage methods for parts and components containing environmentally hazardous materials are identified 1.2 Trapping, storing and disposal procedures for liquid wastes are identified 1.3 Actions are identified that prevent waste from entering either stormwater or wastewater drainage systems 1.4 Uses of a spill kit are identified
2. Identify methods of protecting air quality and controlling noise hazards	2.1 Methods of minimising airborne particles, gases and fumes are identified 2.2 Methods of containing airborne particles, gases and fumes are identified 2.3 Methods of minimising noise are identified 2.4 Methods of insulating noise from immediate environment are identified
3. Identify general workplace sustainability practices	3.1 Methods of minimising waste are identified 3.2 Methods of sorting and storing items for recycling or disposal are identified 3.3 Methods to reduce resource consumption are identified

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from workplace procedures and literature when identifying environmental and sustainability best practices.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURAEA1001 Identify environmental requirements in an automotive workplace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAEA001 Identify environmental and sustainability requirements in an automotive service or repair workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- identify the environmental and sustainability best practices of one automotive service and repair workplace.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- types of waste produced by automotive repair workplaces, including:
  - vehicle wastes, including:
    - coolants
    - oils
    - exhaust emissions
    - evaporative fuel emissions
    - waste components, including tyres
  - noise
  - workplace wastes, including:
    - cleaning materials
    - paper waste
- procedures for controlling hazards to stormwater and wastewater drainage systems, including:
  - trapping, storing and disposing of fluids released from vehicles
  - trapping spills, including the use of spill kits

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    - preventing hazards entering stormwater and wastewater drainage systems, including grease traps and triple interceptors
- procedures for protecting air quality and controlling noise hazards, including:
    - minimising the emission of airborne particles, gases, fumes and noise
    - containing and redirecting airborne particles, gases and fumes
    - insulating noise from automotive workshops
- procedures for minimising waste
- procedures for sorting and storing items for recycling or disposal
- procedures for reducing resource consumption, including water, electricity, fossil fuels and chemicals.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the automotive repair workplace in which they have identified environmental and sustainability best practices, e.g. company name, address and workshop supervisor.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace that complies with current state or territory environmental regulations.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to follow environmental and sustainability best practices, including complying with established workplace procedures and environmental regulations as well as following sustainability practices that may reduce the environmental impact of work practices and outputs.

It applies to those working in the automotive industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Environment

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify environmental	1.1 Reasons for ethical environmental practice in workplace are

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
and sustainability best practices relating to own automotive workplace	identified 1.2 Own environmental responsibilities in the workplace are identified 1.3 Procedures and equipment that enable compliance with environmental regulatory requirements are identified in own workplace 1.4 Procedures and equipment that support sustainability best practice are identified in own workplace
2. Follow environmental best practice procedures in course of own work	2.1 Wastewater and contaminants are identified and prevented from entering water systems or from contaminating land according to workplace procedures and regulatory requirements 2.2 Hazardous airborne particles, gases and fumes are identified and reduced or prevented from being emitted according to workplace procedures and regulatory requirements 2.3 Hazardous noise types and activities are identified, confined to agreed operating hours, and reduced or prevented according to workplace procedures and regulatory requirements 2.4 Environmental damage and breaches of environmental regulations are reported as required to supervisor
3. Follow sustainability best practice procedures in course of own work	3.1 Recyclable and non-recyclable materials are identified, sorted and stored according to workplace procedures 3.2 Recyclable and non-recyclable materials are disposed of according to workplace procedures and regulatory requirements 3.3 Methods to reduce energy resource consumption are followed according to workplace procedures 3.4 Problems with complying with ***sustainability best practice*** are reported as required to supervisor

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Reading skills to:	• interpret information from workshop literature when seeking environmental and sustainability best practice procedures.
Oral communication skills to:	• speak clearly and directly when presenting problems and issues and communicating information relating to environmental issues • discuss environmental and sustainability best practice in automotive workplace with colleagues.
Planning and organising skills to:	• plan own work requirements and actions to ensure environmental and sustainability best practices are followed.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Sustainability best practice must include:	• recycling or reusing waste • conserving energy • conserving natural resources, such as water.

Unit Mapping Information

Equivalent to AURAEA2002 Apply environmental and sustainability best practice in an automotive workplace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAEA002 Follow environmental and sustainability best practice in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- follow environmental and sustainability best practice in an automotive workplace on three different occasions

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- environmental regulations and standards relevant to own automotive workplace, including commonwealth, state and territory legislation and local government by-laws and regulations
- procedures for reporting environmental damage and breaches
- procedures and processes that support environmental sustainability practices, including:
  - reducing waste
  - reusing materials
  - recycling waste
- types of waste produced by automotive workplaces and their impact on the environment, including:
  - vehicle wastes, including:
    - coolants
    - oils
    - exhaust emissions
    - evaporative fuel emissions
    - waste components, including tyres
  - noise

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    - workplace wastes, including:
        - cleaning materials
        - paper waste
        - general rubbish
- procedures for minimising waste
- procedures for sorting and storing items for recycling or disposal
- procedures for reducing resource consumption, including water, electricity, fossil fuels and chemicals
- procedures for controlling hazards to stormwater and wastewater drainage systems, including:
    - capturing, storing and disposing of fluids released from vehicles
    - trapping spills, including the use of spill kits
    - preventing hazards entering stormwater and wastewater drainage systems, including bunding, grease traps and triple interceptors
- procedures for protecting air quality and controlling noise hazards, including:
    - minimising the emission of airborne particles, gases and fumes
    - containing and redirecting airborne particles, gases and fumes
    - insulating noise from automotive workshops.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having followed environmental and sustainability best practice in their automotive workplace, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- environmental regulations and standards relevant to own automotive workplace, including commonwealth, state and territory legislation and local government by-laws and regulations.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAEA003 Monitor environmental and sustainability best practice in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to monitor environmental and sustainability practices and processes in an automotive repair workplace. It involves ensuring that existing environmental and sustainability workplace procedures and processes comply with workplace requirements and environmental regulations.

It applies to those working in the automotive repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Environment

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to monitor	1.1 ***Environmental laws, regulations and standards*** relevant to own

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
workplace compliance with environmental regulations	workplace are sourced and interpreted 1.2 Procedures and equipment that enable compliance with environmental regulatory requirements are identified in own workplace 1.3 Procedures and equipment that support sustainability best practice are identified in own workplace
2. Monitor workplace compliance with environmental best practice	2.1 Cleaning activities are monitored to ensure wastewater and contaminants do not enter water systems or land areas according to workplace procedures 2.2 Liquid waste disposal activities are monitored to ensure waste is trapped, stored and disposed of according to workplace procedures 2.3 Hazardous airborne particles, gases and fumes reduction and containment procedures are monitored according to workplace procedures 2.4 Hazardous noise reduction and containment procedures are monitored to ensure they are at safe levels according to workplace procedures 2.5 Environmental damage and breaches of environmental regulations are monitored, responded to, and reported as required according to workplace procedures
3. Monitor and contribute to sustainability best practice in own workplace	3.1 Workplace sustainability best practice activities that minimise waste are monitored to ensure compliance with workplace procedures 3.2 Workplace sustainability best practice activities that reduce energy resource consumption are monitored to ensure compliance with workplace procedures 3.3 Problems with complying with ***sustainability best practice*** are identified, responded to, and reported as required according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from workshop literature when seeking environmental and sustainability best practice procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting issues.
Oral communication skills to:	• inform colleagues and supervisors of workplace environmental problems and issues.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Teamwork skills to:	• collaborate and cooperate with other team members.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Environmental laws, regulations and standards must include:	• commonwealth, state and territory legislation • local government by-laws and regulations.
Sustainability best practice must include:	• recycling or reusing waste • conserving energy • conserving natural resources, such as water.

Unit Mapping Information

Equivalent to AURAEA3003 Monitor environmental and sustainability best practice in the automotive mechanical industry

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAEA003 Monitor environmental and sustainability best practice in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills**:**

- carry out an environmental and sustainability audit of one automotive workplace that:
  - identifies the workplace's environmental and sustainability practices and equipment
  - assesses the workplace's ability to comply with commonwealth, state and territory environmental legislation and local government by-laws and regulations.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- environmental regulations and standards relevant to own automotive workplace, including commonwealth, state and territory legislation and local government by-laws and regulations
- procedures for reporting environmental damage and breaches
- procedures and processes that support environmental sustainability practices, including:
  - reducing waste
  - reusing materials
  - recycling waste
- types of waste produced by automotive workplaces and their impact on the environment, including:
  - vehicle wastes, including:
    - coolants
    - oils
    - exhaust emissions

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        - evaporative fuel emissions
        - waste components, including tyres
    - noise
    - workplace wastes, including:
        - cleaning materials
        - paper waste
        - general rubbish
- procedures for minimising waste
- procedures for sorting and storing items for recycling or disposal
- procedures for reducing resource consumption, including water, electricity, fossil fuels and chemicals
- procedures for controlling hazards to stormwater and wastewater drainage systems, including:
    - capturing, storing and disposing of fluids released from vehicles
    - trapping spills, including the use of spill kits
    - preventing hazards entering stormwater and wastewater drainage systems, including bunding, grease traps and triple interceptors
- procedures for protecting air quality and controlling noise hazards, including:
    - minimising the emission of airborne particles, gases and fumes
    - containing and redirecting airborne particles, gases and fumes
    - insulating noise from automotive workshops
- procedures for monitoring workplace environmental and sustainability practices and equipment, including workplace environmental auditing.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having monitored environmental and sustainability best practice in an automotive workplace, e.g. workplace environmental audit.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive workplace or simulated workplace
- environmental regulations and standards relevant to automotive workplace, including commonwealth, state and territory legislation and local government by-laws and regulations
- workplace environmental auditing documentation.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAEA004 Manage environmental and sustainability best practice in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to plan and implement a management system to ensure the protection of the environment, and implement and manage sustainability best practice activities in an automotive workplace.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Environment

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Plan compliance with environmental	1.1 Environmental laws, regulations and standards, and sustainability best practices relevant to own automotive workplace are sourced

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
regulations and sustainability best practice	and interpreted 1.2 Penalties for workplace and individual breaches of legislation are identified 1.3 Workplace activities and equipment that are required to comply with environmental laws, regulations and standards are identified 1.4 Workplace activities relevant to ***sustainability best practices*** are identified 1.5 ***Environmental action plan*** is developed that incorporates workplace activities, environmental laws, regulations and standards, and sustainability best practices
2. Implement environmental action plan	2.1 Workplace procedures, equipment and materials are established to meet workplace environmental and sustainability best practice requirements, or existing procedures, equipment and materials are evaluated and updated as required to determine ability to meet requirements 2.2 Checklists are developed to ensure procedures are followed 2.3 Safety data sheets (SDS) are sourced and stored, and staff notified of their location 2.4 ***Emergency response procedures*** for major environmental accidents are developed and documented, and staff are notified of location and documentation developed for recording accidents and spills 2.5 Staff are advised of workplace procedures, and use of equipment, materials and checklists 2.6 Workplace procedures are put in place to address complaints regarding environmental issues
3. Review environmental action plan	3.1 Environmental laws, regulations and standards, and sustainability best practices relevant to work in the automotive industry are regularly sourced and interpreted 3.2 ***Environmental audit*** of workplace is carried out regularly and results are compared with environmental laws, regulations and standards, and sustainability best practices 3.3 Environmental action plan is updated as required to ensure compliance with environmental laws, regulations and standards, and sustainability best practices relevant to work in the automotive industry 3.4 Workplace procedures, equipment and materials are put in place, or existing ones modified, to meet changed workplace environmental and sustainability best practice requirements

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret information relating to environmental laws, regulations and standards, and sustainability best practices.
Writing skills to:	• develop workplace documentation, such as workplace procedures and checklists • legibly and accurately complete environmental incident reports.
Oral communication skills to:	• communicate ideas and information to ensure all work is undertaken according to environmental best practice.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, estimate material requirements required for the work, and calculate wastage rates of various methods.

Planning and organising skills to:	• plan and organise activities, including:
	  • preparing equipment
	  • material recycling and waste management systems
	• use planning, checking and inspection techniques to avoid environmental contamination and wastage.

Self-management skills to:	• work autonomously.
Teamwork skills to:	• supervise others in ensuring compliance with workplace procedures.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Sustainability best practice	• recycling or reusing waste

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must include:	• conserving energy • conserving natural resources, such as water.
Environmental action plan must include:	• workplace environmental and sustainability best practice requirements • actions to meet requirements • person or people responsible for carrying out actions • timeframe for carrying out actions • quantified reduction targets in volume, weight or costs.
Emergency response procedures must include:	• dealing with large spills • dealing with toxic chemical leaks.
Environmental audit must include:	• determining staff adherence to workplace procedures • determining types and occurrences of accidents • identifying workplace activities and equipment that are required to comply with environmental laws, regulations and standards • identifying workplace activities relevant to sustainability best practices • analysing suitability of safety data sheets • analysing suitability of workplace procedures and equipment to comply with environmental laws, regulations and standards, including analysing new technologies.

Unit Mapping Information

Equivalent to AURAEA4004 Manage environmental compliance in an automotive workplace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAEA004 Manage environmental and sustainability best practice in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- develop, implement and review an environmental action plan for one automotive workplace.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- environmental regulations and standards relevant to own automotive workplace, including commonwealth, state and territory legislation and local government by-laws and regulations
- procedures and processes that support environmental sustainability practices, including:
  - reducing waste
  - reusing materials
  - recycling waste
- types of waste produced by automotive workplaces and their impact on the environment, including:
  - vehicle wastes, including:
    - coolants
    - oils
    - exhaust emissions
    - evaporative fuel emissions
    - waste components, including tyres
  - noise

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    - workplace wastes, including:
        - cleaning materials
        - paper waste
        - general rubbish
- procedures for minimising waste
- procedures for sorting and storing items for recycling or disposal
- procedures for reducing resource consumption, including water, electricity, fossil fuels and chemicals
- procedures for controlling hazards to stormwater and wastewater drainage systems, including:
    - capturing, storing and disposing of fluids released from vehicles
    - trapping spills, including the use of spill kits
    - preventing hazards entering stormwater and wastewater drainage systems, including bunding, grease traps and triple interceptors
- procedures for protecting air quality and controlling noise hazards, including:
    - minimising the emission of airborne particles, gases and fumes
    - containing and redirecting airborne particles, gases and fumes
    - insulating noise from automotive workshops
- procedures for developing an environmental action plan, including:
    - identifying environmental and sustainability best practice requirements for an automotive workplace
    - identifying workplace measures, including equipment and processes, to meet environmental and sustainability best practice requirements
    - identifying persons responsible for carrying out measures within and outside the workplace
    - identifying timeframe for carrying out measures
    - identifying quantified reduction targets in volume, weight and costs
    - identifying frequency of performing workplace environmental audits
- procedures for implementing an environmental action plan, including:
    - evaluating workplace environmental and sustainability measures
    - selecting suitable workplace environmental and sustainability measures
    - establishing workplace environmental and sustainability measures, including:
        - developing checklists
        - developing emergency response procedures
        - instructing staff
- procedures for addressing complaints from the public, regulatory authorities and staff
- procedures for reviewing an environmental action plan, including workplace environmental audit.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having managed environmental and sustainability compliance in their automotive workplace, e.g. environmental action plan.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- environmental regulations and standards relevant to automotive workplace, including commonwealth, state and territory legislation and local government by-laws and regulations
- workplace environmental auditing documentation.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAFA001 Use numbers in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to make basic mathematical measurements and calculations relating to vehicle inspection, service and repairs. It includes undertaking calculations to inform parts and labour quotations and the completion of other automotive workplace documentation.

It applies to those required to apply entry-level proficiency in numerically orientated problem-solving skills.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Foundation Skills

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Estimate and make	1.1 Requirements for measurements are identified from task

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
measurements for work	instructions 1.2 Numerical information in automotive workplace texts and tasks is identified 1.3 Workplace measuring equipment and operations appropriate to ***text and task*** are identified and selected 1.4 Accurate measurements are made according to task requirements and workplace procedures
2. Undertake mathematical calculations in workplace activities	2.1 Procedures are established for recording numerical information or interpreting measurement information relating to automotive inspection, service or repair 2.2 ***Calculations*** using required mathematical operations are undertaken as required 2.3 Conversions between units of measurement are undertaken as required 2.4 Problem solving processes are used to resolve measurement and calculation tasks
3. Check and communicate results	3.1 Measurement and calculation outcomes are reviewed and checked 3.2 Final calculations and numerical information are documented according to workplace procedures and using mathematical language and symbols appropriate for the task

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Writing skills to:	• legibly and accurately enter information and complete workplace documentation.
Numeracy skills to:	• fill out workplace documentation, such as daily time sheets and repair work orders.
Technology skills to:	• use calculators.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Text and task must include one of the following:	• text:
	  • repair work orders and job cards
	  • time sheets
	  • work schedules
	  • material and part requisitions
	  • repair quotations
	  • stock records
	  • supply quotations
	• task:
	  • estimating resource or time requirements
	  • estimating and adjusting equipment and machinery settings
	  • sourcing numerical information from workshop service manuals and vehicle repair information.

Calculations must include**:**	• using simple mathematical operations involving automotive data and equipment, with or without the assistance of a calculator and involving:
	  • addition
	  • subtraction
	  • multiplication
	  • division
	  • whole numbers, fractions and percentages.

Unit Mapping Information

Equivalent to AURAFA2001 Use numbers in an automotive workplace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAFA001 Use numbers in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- make accurate measurements relating to three vehicle inspection, service or repair tasks, presenting the measurement outcomes in whole numbers, fractions and percentages
- make accurate calculations based on above measurements demonstrating the use of the following mathematical operations:
  - addition
  - subtraction
  - multiplication
  - division.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- workplace procedures relating to collecting numerical information
- metric and non-metric systems of measurement as they relate to vehicle repairs
- units of measurement used in vehicle inspection, service and repairs
- mathematical operations involving calculations of whole numbers, fractions and percentages, including:
  - addition
  - subtraction
  - multiplication
  - division
- procedures for checking measurement and calculation outcomes
- protocols for using numbers when filling out:

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- timesheets
- repair orders.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having used numbers in the automotive workplace, e.g. repair orders showing parts, time worked and work done.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- written automotive text and service information and documentation, such as workshop service manuals, vehicle repair information, stock records, job cards, repair quotations, time sheets, and supply quotations
- equipment appropriate for undertaking measurements and calculations, such as calculators or computers.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAFA002 Read and respond to automotive workplace information

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to read automotive workplace documentation in order to perform routine inspection, service and repair tasks. It involves reading texts and manuals, and identifying and applying key information.

It applies to those working in an automotive workplace required to apply entry-level proficiency in reading inspection, service and repair texts and related manuals.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Foundation Skills

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to read	1.1 Type of automotive text is identified

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
automotive workplace text	1.2 Purpose and audience of text are identified 1.3 Features of text are identified
2. Identify key information in text	2.1 Relevant information is located using text navigation skills and reading strategies 2.2 High frequency automotive vocabulary and terms are identified
3. Confirm understanding and respond to automotive text	3.1 Understanding of information is checked 3.2 Information is used to respond appropriately

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify own skills and abilities required to carry out the job and learning opportunities to gain required reading comprehension skills.
Reading skills to:	• interpret written documentation found in the automotive workplace.
Oral communication skills to:	• clarify understanding of written texts.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

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Unit Mapping Information

Equivalent to AURAFA2002 Read in an automotive workplace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAFA002 Read and respond to automotive workplace information

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, and foundation skills:

- read and respond to three of the following types of automotive text:
  - repair order
  - repair manual
  - workplace signage, including safe operating procedures
  - safety data sheet (SDS)
  - purchase order
  - packing slip.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- types and purpose of common automotive texts, including:
  - repair orders
  - repair manuals
  - workplace signage, including safe operating procedures
  - SDS
  - purchase orders
  - packing slips
- high frequency vocabulary in automotive texts, including automotive glossaries
- reading strategies for locating and recognising information in automotive workplace texts.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having read automotive-specific texts in an automotive workplace, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- written automotive text specified in the performance evidence.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAFA003 Communicate effectively in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to communicate in an automotive workplace. It involves communicating effectively by conveying and receiving information using verbal and non-verbal techniques and correct automotive technical terminology.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Foundation Skills

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to communicate	1.1 Purpose of communication is established and relevant information is identified

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.2 Non-verbal information is examined and interpreted, as required 1.3 Suitable communication method is chosen to suit audience and purpose 1.4 Relevant information is prepared and prioritised in a logical manner
2. Participate in routine verbal communication	2.1 Information is conveyed clearly in verbal exchanges using language, tone and pace appropriate to audience and purpose 2.2 Automotive terminology, including vehicle and component descriptions, is used accurately and according to industry conventions 2.3 Verbal exchanges with others are conducted in a courteous and ***professional manner*** 2.4 Active listening and questioning techniques are used to clarify and confirm understanding 2.5 Own opinions are clearly expressed and those of others are listened to without interruption
3. Carry out routine written and non-verbal communication	3.1 Accurate and factual information is conveyed clearly in written and other non-verbal communication 3.2 Non-verbal techniques appropriate to the situation are used effectively in interactions with others 3.3 Intended meaning is clarified with recipients as required
4. Operate workplace communication system	4.1 Workplace communication device appropriate for the task is selected according to workplace procedures 4.2 Key functions of workplace ***communication system*** are used according to equipment specifications and workplace procedures
5. Contribute to workplace communication	5.1 Requests for information from colleagues are responded to in a timely manner 5.2 Contributions are made to work group activities and meetings 5.3 Clarification is sought from supervisor or colleagues relating to instructions or information as required 5.4 Feedback from supervisor or colleagues is sought and incorporated into own communication

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	• interpret instructions and requirements in written automotive workplace material.

Digital literacy skills to:	• use digital systems and tools to:
	  • communicate with others
	  • access, extract, organise and present information.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Professional manner must be:	• consistent with workplace communication protocols • appropriate to age, cultural diversity and special needs.

Communication system must include:	• communication devices, including:
	  • telephones
	  • computers.

Unit Mapping Information

Equivalent to AURAFA2003 Communicate effectively in an automotive workplace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAFA003 Communicate effectively in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- complete three of the following communication tasks in an automotive workplace:
  - exchange verbal information regarding work task with colleague
  - exchange verbal information regarding work task with supervisor
  - request verbal clarification of work task from supervisor
  - request information from external customer using the telephone
  - request information from external customer using email.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- common automotive technical terms and their application to an automotive workplace
- active listening and questioning techniques
- verbal communication techniques, including:
  - one-on-one
  - group and team interactions
- collaborative and inclusive techniques for interacting with others, including techniques appropriate to differing ages, cultural backgrounds and special needs
- workplace forms and documents in electronic and hard copy, including:
  - workplace instructions or work orders
  - manufacturer service, repair and equipment manuals
- types of non-verbal communication techniques, including:
  - visual gestures and sign language

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  - body language
  - signage
  - electronic and mechanical signals
- workplace procedures and requirements relating to:
  - workplace document style, format and layout
  - use of communication systems, including email, telephone, intercom and social media
  - reporting
- types of communication devices in automotive workplaces
- operating features of communication devices, including:
  - computers and tablets with email and social media software
  - intercoms and two-way radios
  - telephone systems, including mobile phones.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having communicated effectively in the automotive workplace, e.g. emails, text messages, or written documentation of conversations.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- supervisor, colleagues and customers with whom to communicate in verbal and written exchanges
- workplace communication devices, including a telephone system and computer.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAFA004 Resolve routine problems in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify, clarify and resolve routine basic problems commonly encountered in an automotive workplace. It involves determining and implementing solutions to identified problems, and identifying and reporting on their effectiveness.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Foundation Skills

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and clarify	1.1 Early indicators of ***problems*** are identified or anticipated

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
nature of the routine problem	1.2 Existence of actual problem is verified 1.3 Information regarding problem is gathered from a variety of sources 1.4 Key components of problem are identified within available timeframe
2. Determine, implement and evaluate solution	2.1 Range of possible methods for resolving the problem are identified 2.2 Strengths and weaknesses of each option are analysed 2.3 Optimal solution is determined and applied within workplace timeframes 2.4 Effectiveness of solution is evaluated against options and modifications to solution are made, as required
3. Assist others to identify, clarify and resolve problems	3.1 Assistance is provided to help others identify routine problems 3.2 Problem is discussed with others and any previous solutions are used to help resolve problem

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify own skills and abilities required to perform the job and learning opportunities to gain skills to solve day-to-day problems.
Reading skills to:	• interpret and understand written documentation found in the automotive workplace.
Writing skills to:	• legibly and accurately fill out workplace documentation, such as quality control sheets and graphs, problem solving checklists and reports.
Oral communication skills to:	• speak clearly to be understood • speak using appropriate automotive workplace terms • use appropriate gestures to assist with understanding • listen effectively and give feedback to sender to confirm clear understanding.

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Skills	Description
Teamwork skills to:	• apply knowledge of own role to complete activities efficiently to support team activities and tasks.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Problems must include:	• problems in normal work activities within the scope of own responsibility of that of the work group • problems caused by internal or external changes in work conditions or the work environment.

Unit Mapping Information

Equivalent to AURAFA2004 Solve routine problems in an automotive workplace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAFA004 Resolve routine problems in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- clarify and resolve three of the following routine problems in an automotive workplace caused by:
  - inaccurate or outdated workplace procedure
  - internal changes to work conditions or environment
  - external changes to work conditions or environment
  - additional or non-standard work activities.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- workplace procedures relating to problem identification and resolution strategies
- problem solving methods and techniques, including:
  - brainstorming
  - root cause analysis
  - trial and error approach
  - problem cause and effect strategies
- reporting procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having solved routine basic problems in their automotive workplace, e.g. workplace memos.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace procedures relating to employee participation in problem solving activities.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAFA005 Write routine texts in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to prepare and write routine texts and complete standard automotive industry forms that accurately convey meaning and information.

It applies to those working in the automotive service and repair industry. The unit includes routine workplace texts for different purposes, including industry-related forms.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Foundation Skills

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to complete routine automotive	1.1 Purpose and audience for routine automotive text are identified 1.2 Due date, relevant organisation, and method of lodgement are

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
workplace text	determined 1.3 ***Key features*** of text and workplace conventions for written materials are identified 1.4 Information required to complete the text is sourced and collected
2. Finalise draft of written text	2.1 Text is drafted to ***convey intended meaning*** of factual information or message 2.2 Queries or concerns about information required in the text are clarified with relevant internal or external personnel 2.3 Text is reviewed and checked for accuracy and meaning, and revisions are made as required 2.4 Supporting documentation or information is collected, organised and attached as required 2.5 Signatory requirements are determined and obtained as required
3. Submit text	3.1 Routine text, supporting documentation, and any required payment, are lodged in a timely manner 32 Verification of receipt of text is sought and confirmed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• interpret technical information and instructions to determine requirements for written text.
Numeracy skills to:	• interpret numerical information and record it accurately in documentation.
Digital literacy skills to:	• use digital systems and tools to access, filter, extract, organise and submit written text.
Self-management skills to:	• sequence tasks and follow workplace procedures for preparing and lodging written text.
Technology skills to:	• use office equipment to lodge forms and copy or send written texts.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Key features must include**:**	• layout and organisation of text • text that is appropriate for audience and purpose.
Conveying intended meaning must include**:**	• spelling with reasonable accuracy • mostly using correct grammatical structure and punctuation • using appropriate automotive terminology.

Unit Mapping Information

Equivalent to AURAFA2005 Write routine texts in an automotive workplace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAFA005 Write routine texts in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- write two short routine automotive texts for different audiences and purposes
- complete and lodge one industry form with an external organisation.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- basic principles of effective written communication, including:
  - differences between requirements for written as opposed to spoken English
  - purposes of written communication used in automotive workplaces
  - features of routine formal and informal workplace texts, including layout
  - writing strategies to complete routine workplace texts, including planning, drafting and reviewing
  - grammar and vocabulary sufficient to complete routine workplace texts legibly
  - writing conventions for routine workplace texts
- workplace procedures or style guides for preparing written texts, including:
  - protocols relating to workplace documentation, including emails and memos
  - workplace sign-off and approval processes relating to written texts
- types, applications and layouts of industry forms, including:
  - forms from licensing and regulatory organisations
  - workplace-specific forms, including:
    - leave application forms
    - requisitions

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    - time cards
- electronic and manual lodgement processes.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having written a range of routine texts in an automotive workplace, e.g. workplace-specific documents and forms that they have completed.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace-specific documents that can be completed
- writing equipment and materials
- office equipment and communication devices
- dictionaries or written language aids.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAFA006 Conduct research and present technical reports

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to research technical subject matter, and prepare and present a technical report of findings. It involves identifying and analysing research requirements, planning and conducting the research, evaluating findings, and developing and presenting the technical report.

It applies to those working in the automotive service and repair industry at a specialist technician or manager level.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Foundation Skills

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Determine research	1.1 Problem requiring research is identified and clarified

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
requirements	1.2 Research purpose, objectives and limits, and timeframe are identified, clearly defined, and confirmed 1.3 ***Research outline*** is prepared and confirmed with key stakeholders
2. Plan research	2.1 Systematic methodology for information collection is developed 2.2 Appropriate sources of ***research*** information are identified, reviewed and assessed 2.3 ***Research design*** is developed according to research requirements 2.4 Resources that support research requirements are identified and sourced 2.5 Pilot study is conducted to identify variations or additions to proposed research plan
3. Conduct research	3.1 Research is carried out according to established purpose, process and objectives 3.2 Research data is collected, manipulated as required, and stored for future reference
4. Analyse research information	4.1 Research data is prepared for analysis 4.2 Data is analysed using appropriate methods according to workplace procedures 4.3 Conclusions, findings and recommendations are drawn from data analysis and documented according to workplace procedures
5. Prepare and present research report	5.1 Technical report, and as required associated presentation materials, are prepared according to ***report requirements*** and ***workplace standards*** 5.2 Report is presented according to workplace procedures 5.3 Information management and report storage requirements are followed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate and analyse a range of technical information and documents relevant to work activities • develop strategies to research and write technical reports.
Reading skills to:	• interpret technical information, instructions and requirements • interpret graphical illustrations, technical information and terminology in manuals and textbooks.
Writing skills to:	• communicate ideas and information using relevant automotive terminology • prepare and present textual and numerical information in technical reports.
Oral communication skills to:	• clarify and confirm report requirements, including target audience.
Technology skills to:	• use workplace technology to access technical documents, including computerised technology.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Research outline must include:	• information entry, including hard and soft copy • data storage and version control • print output.
Research must include one of the following:	• desk-based research • experiments • tests.
Research design must include:	• research methodology • data gathering methods • data analysis methods.
Report requirements must satisfy:	• purpose • objectives • timeframe • planned process • reporting, including findings and proposed actions or recommendations.

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Workplace standards must include:	• agreed quality standards • suitability for intended audience and purpose • use of specialist or management summaries • compliance with protocols, conventions and legal requirements relating to acknowledgements and intellectual property.

Unit Mapping Information

Equivalent to AURAFA5006 Prepare technical reports

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAFA006 Conduct research and present technical reports

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- research and prepare two different technical reports, in which the work must involve:
  - accessing and interpreting relevant automotive technical information
  - developing a research outline
  - undertaking detailed research of the subject area
  - analysing data
  - developing conclusions, findings and recommendations
  - presenting reports to intended target audience.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- research methods, including:
  - qualitative, including:
    - participant observations
    - interviews
    - focus groups
  - quantitative, including:
    - questionnaires
    - laboratory experiments
- procedures for undertaking research, including:
  - planning the research, including:
    - identifying the problem

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    - defining purpose and limits of the research
    - developing a research outline
    - sourcing information
  - designing the research, including:
    - methodology
    - data gathering
    - data analysis
    - conducting pilot studies
  - conducting the research, including data gathering, including common testing procedures
  - data analysis, including calculating mean, mode, median and percentages
  - drawing conclusions from data analysis
- preparing and presenting a technical report, including:
  - writing for a specific audience
  - using pictures and diagrams
  - using style guides
  - storing data and documents.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to researching, preparing and presenting technical reports in the automotive workplace, e.g. technical reports and presentation notes.

Assessment must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- situations requiring research activities and technical report writing
- range of reference materials relevant to technical research activities
- commercially realistic number of co-workers to which the technical report may be presented.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAFA007 Develop and document specifications and procedures

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify and analyse work task requirements and activities, and then develop and document technical specifications and procedures providing concise and unambiguous direction and guidance relating to them.

It applies to those working in the automotive service and repair industry. It involves conducting research and writing technical specifications and procedures at a specialist technician or manager level.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Foundation Skills

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and plan requirements	1.1 Technical activities and tasks requiring specifications and procedures to be developed are identified 1.2 Requirements and formats for specifications and procedures are established and confirmed 1.3 Requirements for information entry, storage, output and quality of document production are identified according to workplace procedures 1.4 Document design is confirmed as appropriate for efficient entry of information and satisfies established document presentation requirements 1.5 Authoritative sources and references are identified for use in preparation of specifications and procedures
2. Prepare and develop specifications	2.1 Technical information for inclusion in specifications is collected and validated according to workplace procedures 2.2 Specifications are developed that reflect document design requirements and are written in a manner appropriate to workplace
3. Prepare and develop procedures	3.1 Technical activities and tasks requiring procedures to be developed are analysed, sequenced and logically grouped 3.2 Technical procedures are developed that reflect document design requirements and are written in a manner appropriate to workplace
4. Document specifications and procedures	4.1 Developed material is documented according to workplace procedures and document design requirements 4.2 Information management requirements, including document storage, are followed according to workplace procedures and document requirements 4.3 Document is presented ready for use as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Reading skills to:	• interpret technical information, instructions and requirements in written material as required to carry out technical research activities • interpret and understand a range of written document specifications and procedures found in the automotive workplace.
Writing skills to:	• communicate ideas and information in a manner appropriate to workplace.
Numeracy skills to:	• use standard mathematical terminology and structures to incorporate measurements, calibration and test requirements into technical specifications and procedural documentation.
Digital literacy skills to:	• navigate computer software to collect, add and edit information in documents.
Planning and organising skills to:	• plan and organise the research and writing of technical specifications and procedural requirements to avoid backtracking and workflow interruptions.
Technology skills to:	• use computers and software.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURAFA5007 Develop and document specifications and procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAFA007 Develop and document specifications and procedures

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- develop and document the technical specifications and procedures of an automotive repair or manufacturing process that would take more than thirty minutes to complete, including:
  - safety requirements of the process
  - steps involved in undertaking the process, including:
    - use of any tools, equipment and materials
    - explanatory graphics
  - specifications explaining the requirements that a product or assembly must meet or exceed
  - bibliography of sources of information.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- types and application of technical documents, including:
  - technical background reports
  - technical guides
  - technical specifications, including:
    - open specifications
    - closed specifications
    - methods of describing limits, including tolerances, clearances and wear
  - technical and standard operating procedures, including:
    - safe operating procedures

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        - dismantle and assembly procedures
    - literature reviews
- technical document writing techniques, including:
    - confirming document scope
    - understanding the audience
    - developing a plan
    - collecting information, including:
        - using primary and secondary sources
        - acknowledging sources
    - methods of organising information to meet document requirements, including:
        - linear or chronological
        - parts of an object graphics
        - simple to complex
        - specific to general
        - general to specific
    - writing first drafts, including:
        - using style guides
        - using graphics
    - revising and editing drafts
- workplace policies relating to publishing documents with company intellectual property content.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the specifications and procedures that they have developed, e.g. procedural documents relevant to their workplace.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- situations requiring research and documentation of technical specifications and procedures
- range of reference materials relevant to technical research activities and vehicle specifications and procedures.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAFA009 Carry out research into the automotive industry

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to carry out research into the nature and structure of an automotive retail service and repair (RS&R) or automotive manufacturing workplace. It also requires the learner to prepare a research report.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Common

Unit Sector

Foundation Skills

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section

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ELEMENT	PERFORMANCE CRITERIA
1. Prepare and plan research	1.1 Automotive industry sectors and types of businesses are identified for research 1.2 Information on the structure and operation of the automotive industry is located 1.3 ***Safety and environmental requirements*** for the automotive business are sourced
2. Investigate nature and structure of automotive business	2.1 Type of business, product line and customer profile are identified 2.2 Basic ***supervision or management structure*** of business is identified 2.3 ***Employment conditions*** of business are identified 2.4 ***Employee clothing requirements*** for business are identified 2.5 Workplace plan is drawn detailing identified ***workplace safety features*** 2.6 ***Environment protection features*** of business are identified 2.7 Findings and details are recorded for research report
3. Prepare research report	3.1 Research findings are reviewed and summarised under broad headings 3.2 Research findings are presented as a document

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate key information quickly and efficiently in appropriate sources.
Reading skills to:	• interpret information from industry and workplace documents.
Writing skills to:	• organise findings and prepare a research report.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to obtain information on business structure and operation from business workers.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• relevant workplace procedures reflecting health and safety requirements • material safety management systems • hazardous substances and dangerous goods codes.
Supervision or management structure must include one or more of the following:	• employee supervision • line or operational management • team leaders • trainers.
Employment conditions must include one or more of the following:	• employee attendance times • induction training • shift work and weekend work requirements • type of qualifications.
Employee clothing requirements must include:	• any requirements in special work areas, such as foundry or paint shop • ear protection • personal protective clothing and footwear • safety glasses • any uniform requirements.
Workplace safety features must include:	• emergency procedures • fire extinguishers (type and location) • first aid facilities • hazardous warning signs • manual-handling procedures.
Environment protection features must include:	• emission control • material recycling • waste material disposal.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAFA009 Carry out research into the automotive industry

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- produce a research report on an automotive retail service or repair business or a component manufacturing business.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- automotive industry information, including:
  - sectors of the industry
  - types of businesses in each sector, including their products and services
  - distribution channels for industry products and services
  - relationships of the automotive industry with other industries
  - state and commonwealth government agencies responsible for directing safety and environmental requirements for the automotive industry
  - major automotive industry bodies and associations
  - career opportunities and career paths in the automotive industry
- roles, responsibilities and inter-relationships of individual personnel in an industry environment, including:
  - unions and employer bodies
  - professional associations
- industrial relations issues, including:
  - awards and enterprise bargaining agreements
  - non-award areas
  - cultural issues
- employment obligations in day-to-day work activities in the automotive industry
- new technologies in the automotive industry and their effect on the industry

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- procedures for recording, reviewing and presenting research findings.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that validates the industry research.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- reference books and technical manuals
- industry journals
- computer and internet access
- job descriptions
- federal and state industrial awards
- specialist technical publications.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAKA001 Use information technology systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to use workplace information technology (IT) systems in a manner that complies with workplace procedures and guidelines. It involves operating hardware and software to access, retrieve, edit and update information, and solving a limited range of routine and predictable problems in relation to the IT system.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Information Technology

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to use workplace IT system	1.1 ***Safe work practices and procedures*** to be applied when using workplace IT system are identified 1.2 Workplace procedures, manuals or specific instructions relating to the use of IT system and manufacturer or component supplier software are accessed and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
2. Use IT system functions	2.1 Workplace IT system and ***software applications*** are accessed and operated according to manufacturer or component supplier instructions and workplace procedures 2.2 Keyboard skills are used accurately to carry out the entry, manipulation and retrieval of data and information according to workplace procedures 2.3 Data is transmitted according to electronic data interchange (EDI) procedures 2.4 Save and back-up procedures are carried out regularly according to workplace procedures
3. Edit or update data and information in IT system	3.1 Data and information on IT system to be edited or updated are identified using appropriate sources 3.2 Data and information are edited or updated and checked for accuracy and completeness before saving or backing up according to workplace procedures
4. Solve problems relating to IT system	4.1 Equipment, hardware or software faults are identified and rectified where possible and within scope of own role, or reported to relevant persons according to workplace procedures 4.2 Assistance with any routine IT problems that arise is positively and actively provided to others within scope of own role and where appropriate 4.3 Established workplace maintenance programs for hardware and software systems are followed according to manufacturer or component supplier specifications and workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• select and interpret key information in IT user manuals, workplace procedures, and manufacturer or component supplier specifications • interpret IT system help files and respond to system help prompts.

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Skills	Description
Writing skills to:	• legibly and accurately enter information into IT systems.
Planning and organising skills to:	• sort and sequence relevant data and information to access, process and transmit • schedule back-up procedures.
Teamwork skills to:	• liaise collaboratively and assist others with workplace IT systems within scope of own role.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safe work practices and procedures must include:	• following workplace ergonomic guidelines when operating IT systems • using physical aids as required and appropriate to support safe and effective use of IT system hardware.
Software applications must include:	• databases • menus • EDI.

Unit Mapping Information

Equivalent to AURAKA2001 Use information technology systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAKA001 Use information technology systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- operate a workplace information technology (IT) system on three different occasions in line with workplace procedures and guidelines, in which the work must involve:
  - accessing and retrieving data and information
  - entering and transmitting data and information
- carry out back-up of workplace IT system following above work activities
- problem solve routine IT problems or breakdowns during above work activities.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to using information technology systems, including:
  - ergonomic guidelines and practices that maintain own health and safety when operating IT systems
  - using physical aids to support safe and effective use of IT system hardware
- basic IT terminology, especially relating to IT help files and user manuals
- key requirements of workplace procedures and manufacturer or component supplier specifications relating to the use of the IT system
- key features of workplace IT system, including:
  - use and operation of equipment
  - purpose, key features and uses of software applications, including electronic data interchange (EDI) programs

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- use of hardware and associated relevant input and output devices, including scanning and barcode equipment and, when working in a retail environment, point-of-sale terminals
- routine maintenance requirements for hardware and software systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the workplace IT systems they have used, e.g. IT maintenance schedules.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- an IT system consisting of PC, keyboard and software currently used in the workplace
- relevant user manuals or workplace procedures relating to use of IT systems
- data or information available:
  - on a current IT system
  - to enter and manipulate on the IT system.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAKA002 Adapt work processes to new technologies in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to investigate the nature of new technologies, and modify existing work processes and procedures to incorporate the new technologies.

It applies to those working in the automotive industry. It involves adapting work processes and new technologies in an automotive service or repair workplace or an automotive office administration environment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Information Technology

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Investigate the new technology	1.1 Information is obtained on new technology through a range of ***sources*** and in line with workplace expectations and procedures 1.2 New technologies of value to the workplace are identified and evaluated to determine their application and suitability 1.3 Impact of new technologies on existing work processes is identified and analysed 1.4 Information about additional materials and equipment required to adopt the technology is sourced and evaluated
2. Modify existing work processes and procedures	2.1 Action plan is prepared to implement new technology into work processes 2.2 Processes are modified to incorporate new technologies 2.3 Impact on workflow and productivity is analysed and minimised through planning process and communication with staff 2.4 Information on the use of new technologies is communicated to staff, as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding relating to new technologies.
Reading skills to:	• research and critically analyse text and numerical information about new technologies from a range of sources.
Writing skills to:	• legibly and accurately record information about new technologies and convey to others using clear and concise language.
Oral communication skills to:	• clearly present information to others about new technologies and changes to work processes using concise language and tone appropriate for audience.
Numeracy skills to:	• use mathematical ideas and techniques to interpret numerical information relating to new technologies and impact on work processes.

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Skills	Description
Initiative and enterprise skills to:	• proactively adopt new technologies and adapt and improve work processes.
Planning and organising skills to:	• plan and prioritise implementation of new technologies in work processes.
Technology skills to:	• use computers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Sources must include:	• desk-based research • consultation with technical sources • training and information sessions.

Unit Mapping Information

Equivalent to AURAKA3002 Adapt work processes to new technologies

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAKA002 Adapt work processes to new technologies in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- conduct research and collate information on one new piece of technology to be adopted in the automotive workplace
- prepare an action plan outlining the modification of existing work processes and staff training required to incorporate above new piece of technology into the workplace.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- existing workplace activity, processes and procedures relevant to implementation of specific new technology
- sources of information on new technology, including:
  - internet
  - manufacturer or component supplier specifications
  - technical journals and manuals
  - workshops, information sessions, and trade shows
- procedures for cost-benefit analysis of opportunities and risks, considering:
  - cost savings
  - customer satisfaction
  - marketing opportunities
  - new business opportunities
  - payback period
  - profit margins
  - short and long-term benefits

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- key features of action or implementation plan covering:
  - timelines
  - costs
  - business case or purpose
  - team or section requirements
- procedures for documenting action or implementation plans:
  - checklists
  - written documents
  - visual management board and items.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having adapted work processes to new technologies in an automotive workplace, e.g. action plans.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive service and repair workplace or simulated workplace
- sources of information about new technologies
- tools and materials to research information
- computer hardware and software and general office equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURALA001 Comply with legal aspects of a service and repair contract in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to act within legal and ethical boundaries of a service and repair contract when dealing with customers, implement measures to avoid disputes, and resolve disputes that do occur.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Regulatory or Legal

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Interpret service and repair contract	1.1 Legal obligations of all parties involved in a valid service and repair contract are identified

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.2 Legal liabilities of repairer performing work without a valid service and repair contract are identified 1.3 Regulatory bodies with authority to inspect the workplace if the customer takes legal action are identified 1.4 Workplace service and repair contract is analysed to determine relevant legal compliance requirements
2. Comply with service and repair contract requirements	2.1 Procedures are implemented to advise customers of the terms of contract into which they are entering 2.2 Procedures are implemented to ensure staff only use valid service and repair contracts 2.3 Procedures are implemented to minimise liability or customer claims in relation to bailment
3. Establish service and repair warranty requirements	3.1 ***Warranties document*** is developed detailing requirements 3.2 Procedures are implemented to ensure staff are aware of warranty requirements 3.3 Warranty requirements are documented and stored according to workplace procedures
4. Enforce service and repair contract requirements	4.1 Workplace policy on payment terms for services provided are implemented according to workplace procedures 4.2 Workplace legal rights and obligations when selling or disposing of uncollected vehicles or goods are identified and observed as required 4.3 Legal procedures to recover payment when a customer defaults are identified and implemented as required
5. Conduct dispute resolution processes	5.1 Procedures to minimise disputes with customers are implemented 5.2 Workplace records are maintained to support outcomes in any customer disputes 5.3 External sources of assistance in dispute resolution are identified 5.4 Outcomes of customer disputes and resolutions are analysed to develop procedures to avoid future disputes

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding relating to legal and ethical business dealings.

Reading skills to:	• interpret:
	  • textual and numerical information in product or service documentation relating to contractual agreements
	  • original equipment manufacturer (OEM) or authorised agency's service and repair agreements
	  • vehicle specifications and job requirements.

Writing skills to:	• legibly and accurately complete:
	  • dispute resolution forms and legal action plans outlining customer's statutory rights and settlement options
	  • vehicle warranty documents and reports.

Oral communication skills to:	• communicate ideas and information to customers and supervisors relating to legal and ethical business dealings • participate in verbal exchanges using active listening and questioning techniques to gather, clarify and confirm customer information and feedback.
Numeracy skills to:	• use mathematical ideas and techniques to count and measure.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Warranties document must:	• meet legal requirements • comply with workplace policies • not compromise customer consumer guarantees • be written in plain language.

Unit Mapping Information

Equivalent to AURALA3001 Determine legal aspects of an automotive service and repair contract

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURALA001 Comply with legal aspects of a service and repair contract in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- comply with the legal aspects of service and repair contracts with three different customers, in which the work must involve:
  - an abandoned vehicle
  - a vehicle kept as bailment
  - customer dissatisfaction due to failed installed parts.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- types and purpose of contracts, including:
  - key phases of contract, including:
    - offer
    - acceptance
    - consideration
  - oral and written contracts
- key components of Australian Consumer Law (ACL) relating to legal and ethical requirements of contracts and service agreements, including:
  - damages arising from breach of contracts
  - reasonable costs
  - proof of transaction
  - delays in delivery and non-supply

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  - charge back
  - contracts with minors
  - unfair contract terms
  - loss or damage to consumer property
  - misleading or deceptive conduct
  - warranties
  - dispute resolution
- key features of automotive service and repair contracts, including:
  - terms of the relationship, including:
    - acknowledgements and agreements from customer
    - definitions
  - rights, responsibilities and obligations of the service provider and principal, including:
    - level of performance and services being provided
    - authority in respect of the vehicle, including entering and test driving the vehicle
    - guarantees and warranties
    - lien to secure payment
    - abandonment of vehicle
    - liability
    - privacy
    - jurisdiction of the contract
  - business processes, including:
    - pricing
    - payment and invoicing
    - returns policies.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having complied with the legal aspects of a service and repair contract in an automotive workplace, e.g. correspondence between customer and business.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace n
- commercially realistic range of automotive service and repair contracts
- three different customers with the service and repair contract issues specified in the performance evidence.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAMA001 Work effectively with others in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to work effectively with a range of people in an automotive workplace. It involves identifying own and others' job roles, communicating appropriately, working in shared tasks, and dealing with issues, problems and conflicts.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Management, Leadership and Supervision

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Determine own and	1.1 Own and others' workplace responsibilities and duties are

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
others' roles and job requirements	***identified*** 1.2 Clarification is sought from colleagues and supervisor where uncertainty or overlap of job roles occurs 1.3 Communication with colleagues and others is performed in a courteous manner, using language appropriate to the audience, and according to workplace procedures 1.4 Differences in personal values and beliefs of colleagues are accepted and professional behaviour maintained in all activities 1.5 Safe and appropriate workplace attire is identified, used and maintained
2. Work in shared tasks	2.1 Own and others' roles in shared tasks are determined and clarified 2.2 Participation in task planning is carried out as required, work-related information is shared, and constructive contributions are made 2.3 Work tasks are carried out according to personal roles and responsibilities and workplace requirements 2.4 Support is provided to colleagues to ensure tasks and goals are met, as required 2.5 Constructive feedback on performance provided by colleagues is requested, acknowledged, and acted on 2.6 Suggestions for improvements to processes are made and discussed with colleagues
3. Deal effectively with issues, problems and conflict in work groups	3.1 Personal issues that impact on own work and relationships with colleagues are discussed with supervisor, as required 3.2 Workplace issues with colleagues are identified, discussed and a resolution found according to workplace procedures 3.3 Difficult to resolve issues, problems and conflict are escalated to appropriate person according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• identify own skills and knowledge to perform the job and identify gaps.
Reading skills to:	• access workplace procedures and identify and interpret sections relating to workplace diversity, equal opportunity, discrimination and conflict resolution • access and interpret work task instructions and work schedule requirements.
Oral communication skills to:	• clarify and confirm information and instructions using active listening and questioning techniques • speak clearly and directly to present problems or issues to appropriate person.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Identification must be based on:	• information and instructions about:
	  • objectives
	  • performance requirements
	  • workplace procedures.

Unit Mapping Information

Equivalent to AURAMA2001 Work effectively with others

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAMA001 Work effectively with others in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- work effectively with others in an automotive workplace, in which the work must involve:
  - participating in one shared work task involving two colleagues
  - providing support on a work task to a colleague
  - responding to feedback provided by a group member
  - facilitating the resolution of a work issue or problem.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- common types of automotive workplace job roles and accountabilities, including:
  - trainee assistant
  - technician
  - diagnostic technician
  - workshop supervisor
  - accounts person
  - sales person
  - business owner
  - customer
- key features of workplace policies and procedures, including:
  - codes of conduct, including those for workplace:
    - discrimination
    - violence, bullying and harassment

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    - disciplinary policies
    - leave policies
- basic communication techniques and styles for different audiences, including appropriate language, tone and emphasis
- fundamentals of working effectively with others, including:
    - active listening
    - establishing common goals
    - assigning roles
    - creating objectives and timelines
    - resolving conflicts quickly and fairly
- methods for obtaining and giving feedback, including:
    - formal and informal performance appraisal methods
    - verbal and non-verbal communication techniques
    - techniques for supporting work group members
- basic ethical principles of respect for persons, including:
    - understanding and respecting cultural differences
    - identifying common ground
- basic conflict-resolution strategies
- workplace procedures and requirements relating to personal presentation, attire and grooming.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having worked effectively with others in an automotive workplace, e.g. supervisor performance reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- commercially realistic range of diverse workplace colleagues
- documentation, including workplace policies and procedures manuals relating to ethics, employee and employer rights and responsibilities, attire and grooming, job descriptions and organisational charts.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAMA002 Communicate business information in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to communicate business information effectively in verbal and written forms and through participating in meetings, and presenting information to others. It involves reaching agreement on work-related issues and formally communicating specific business information on a day-to-day basis using a range of communication devices and methods.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Management, Leadership and Supervision

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Communicate information verbally	1.1 Purpose of verbal communication is determined and communication style is chosen to suit audience and purpose 1.2 Information is delivered verbally using clear, succinct and unambiguous language and accurate industry terminology 1.3 Listeners are questioned to verify that information provided has been received and understood accurately 1.4 Clarification, rephrasing or additional explanations are provided as required 1.5 Verbal information received from others is listened to carefully, and clarified and confirmed with the speaker as required
2. Communicate information in writing	2.1 Purpose or objectives of written communication are determined and communication style is chosen to suit audience and purpose 2.2 Written text is drafted using correct vocabulary, grammatical structures and conventions 2.3 Text is logically structured, formatted and presented following workplace procedures 2.4 Text is checked to confirm that key messages are clear, succinct and unambiguous and meet intended purpose 2.5 Written information received from others is read carefully and information is clarified as required
3. Communicate in meeting	3.1 Purpose of meeting is identified and clarified as required 3.2 Meeting is attended and positive contribution to outcomes is made according to workplace meeting procedures and own level of responsibility 3.3 Own responsibilities relating to meeting outcomes are carried out according to workplace meeting procedures
4. Present information to others	4.1 Purpose for presenting information to others and features of the target audience are identified and clarified 4.2 Information to be presented is planned and organised logically 4.3 Resources needed to present information are identified and selected 4.4 Resources are checked prior to presenting information to ensure that they are functioning properly 4.5 Presentation is conducted as planned and appropriate responses to audience questions and feedback are provided 4.6 Audience feedback on presentation is reviewed to improve future practice

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
5. Discuss and resolve a workplace issue	5.1 Key factors and issues relating to a workplace issue are analysed 5.2 Key discussion points and suitable approach to discussion are planned 5.3 Discussion is conducted according to planned approach with solutions or outcomes acceptable to both parties negotiated and agreed 5.4 Required follow-up action is carried out according to workplace procedures and further discussions with other parties conducted as required 5.5 Solutions or outcomes are documented according to workplace procedures.

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Numeracy skills to:	• interpret and convey numerical or financial information in verbal information and written texts.

Digital literacy skills to:	• use digital systems and tools to:
	  • communicate with others
	  • access, extract, organise and present information.

Planning and organising skills to:	• sequence and structure information to convey to others in a clear and logical manner.
Teamwork skills to:	• work with others and in a team by using collaborative communication techniques.
Technology skills to:	• operate equipment and technology to present information.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURAMA2002 Communicate business information

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAMA002 Communicate business information in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- receive and respond to one piece of verbal communication relating to the automotive workplace that includes asking questions and providing responses
- receive and respond to one piece of written communication relating to the automotive workplace
- participate in one workplace meeting relating to the automotive workplace that includes asking questions and providing responses
- prepare and make one presentation of information relating to the automotive workplace
- prepare for and participate in one discussion to resolve a workplace issue and document the outcomes.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- automotive industry technical terms and their application to an automotive workplace
- use of communication systems, including email, telephone, intercom and social media
- procedures for communicating verbally, including:
  - active listening and questioning techniques
  - creating clear, succinct and unambiguous language
  - clarifying meaning
  - choosing language to suit audience
- procedures for communicating in writing, including:
  - accessing and interpreting key concepts of written material
  - organising responses to address questions and according to communication medium

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    - creating draft documents, including structure and formatting
    - editing documents
- procedures for participating in meetings, including:
    - accessing and reviewing previous meeting minutes and agendas
    - contributing to meeting outcomes
    - determining own role in meeting outcomes
- procedures for presenting information, including:
    - determining target audience
    - determining presentation format, including choosing equipment and materials
    - delivering a presentation
- procedures for negotiating between parties, including:
    - determining key factors of issues
    - planning discussions
    - conducting discussions, including:
        - establishing rapport
        - acknowledging disagreements and the views of others
        - dealing constructively with differences
        - staying focused
        - making a strong case without overselling or becoming personal or aggressive
        - compromising to achieve realistic and achievable outcomes.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having communicated business information in an automotive workplace, e.g. emails, meeting minutes, or presentation slides.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- commercially realistic range of internal and external customers with whom to communicate
- written communication from internal or external customers
- meetings to attend, including meeting agendas and previous minutes
- equipment and materials appropriate for workplace presentations.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAMA003 Conduct information sessions in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to prepare and present information sessions conducted in an automotive workplace, and then follow up on their outcomes. It involves preparing and presenting technical workplace information in structured sessions with workplace participants.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Management, Leadership and Supervision

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for information	1.1 Specific purpose and objectives of information session are

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
session	determined and confirmed 1.2 ***Arrangements*** are made for session and participants are invited or notified of session in a timely manner 1.3 Equipment, tools and other resources required for session are selected and sourced 1.4 Information to be communicated in session is planned, structured logically, and organised
2. Present information session	2.1 Reason for session and relevance of information being presented are clearly explained to participants 2.2 Information is presented clearly using resources and presentation techniques to enhance participant understanding 2.3 Session is delivered according to required objectives
3. Follow up outcomes of information session	3.1 Participants are encouraged to comment or ask questions relating to session and appropriate responses are provided 3.2 Participant feedback on session are sought and used to guide future information sessions 3.3 Actions required as a result of session are carried out

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• interpret instructions and requirements in written material relating to information session.
Writing skills to:	• legibly and accurately present textual and numerical information in a documented format for the information session.
Oral communication skills to:	• clearly and effectively present information using language, tone and pace appropriate to audience and purpose.
Numeracy skills to:	• use mathematical ideas and techniques to ensure times are allocated and followed in the information session.
Digital literacy skills to:	• use digital systems and tools to communicate with others • access and organise information.

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Skills	Description
Technology skills to:	• operate media devices and workplace technology to conduct an information session.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Arrangements must include:	• time and place of session • session duration • number and type of participants for session.

Unit Mapping Information

Equivalent to AURAMA3003 Conduct information sessions

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAMA003 Conduct information sessions in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- plan and conduct two information sessions, each covering a different automotive technical or workplace topic
- during above sessions, demonstrate effective communication skills, including:
  - active listening
  - questioning techniques
  - collaborative activities.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- automotive industry technical terms and their application to an automotive workplace
- automotive industry technical information relevant to information session
- workplace procedures relating to conducting presentations, information sessions or meetings
- adult learning principles and training techniques
- types of information sessions, including:
  - demonstration
  - discussion and questioning
  - group work
  - simulations and role play
- presentation aids and materials, including:
  - computer simulations and presentations
  - diagrams, charts and posters

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  - models
  - paper-based materials
  - data projector and whiteboard
- techniques to evaluate presentation effectiveness, including:
  - critical friends
  - participant survey or written feedback
  - participant interviews.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the information sessions they have conducted in their workplace, e.g. copies of presentations delivered.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- participants to be involved in the information sessions specified in the performance evidence
- equipment, information, materials and tools appropriate for conducting information sessions
- computers, presentation media and business technology required to prepare information sessions.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAMA004 Maintain business image in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to monitor staff attire and grooming standards, maintain the physical appearance of the workplace, implement waste disposal processes, and promote business products and services.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Management, Leadership and Supervision

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Maintain physical appearance of the	1.1 Cleanliness and tidiness of the workplace are maintained according to workplace procedures, local government

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
workplace	requirements, and ***safety requirements*** 1.2 Workplace is kept free of rubbish and waste according to workplace procedures, local government requirements, and safety requirements 1.3 Defined areas for specific tasks are maintained according to workplace procedures 1.4 Maintenance plan is monitored to ensure facilities and equipment are regularly maintained 1.5 Workplace signage is clearly and appropriately displayed throughout the organisation
2. Monitor workplace attire and grooming standards	2.1 Expectations regarding attire and grooming are communicated to staff on a regular basis 2.2 Standards are updated as needs arise according to workplace requirements 2.3 Dress and grooming of staff are monitored to ensure standards are met 2.4 Breaches of standards are identified and staff informed
3. Monitor waste disposal processes	3.1 Waste disposal is monitored to ensure compliance with workplace procedures and local government requirements 3.2 Recycling opportunities are identified and implemented according to workplace procedures and local government requirements 3.3 Workplace environmental documents are maintained
4. Promote workplace products and services	4.1 Promotional activities are monitored to ensure planned implementation according to workplace procedures 4.2 Promotional activities are actively supported according to own role and workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Reading skills to:	• interpret relevant safety information, local government requirements, and workplace procedures.
Numeracy skills to:	• use mathematical operations, including addition, subtraction, multiplication and division, to calculate quantities relating to housekeeping activities.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Teamwork skills to:	• work with staff and supervisors when monitoring and following procedures that impact on business image.
Technology skills to:	• operate housekeeping and general office equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • manually handling goods • using cleaning chemicals and dangerous goods • selecting and using personal protective equipment (PPE).

Unit Mapping Information

Equivalent to AURAMA3004 Maintain business image

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAMA004 Maintain business image in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- maintain the business image of an automotive workplace over one week, including:
  - ensuring a clean and tidy appearance of the workplace
  - ensuring correct staff attire and grooming
  - ensuring waste is correctly disposed of
  - engaging in one promotional activity to the limits of own role.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to maintaining business image in an automotive workplace, including procedures for:
  - manually handling goods
  - using cleaning chemicals and dangerous goods
  - selecting and using personal protective equipment (PPE)
- procedures for maintaining the physical appearance of an automotive workplace, including procedures for:
  - cleaning buildings, grounds and equipment
  - waste disposal and recycling processes, including designated locations for waste storage and collection
  - maintaining defined areas for specific tasks, including:
    - reception area
    - staff and public amenities

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        - service and repair work areas
    - monitoring maintenance plans
    - monitoring workplace signage, including:
        - checking currency
        - placement
        - condition
- procedures for monitoring workplace attire and grooming standards, including procedures for:
    - communicating requirements to staff
    - evaluating staff attire and grooming against workplace standards
- procedures for monitoring waste disposal processes, including:
    - workplace and local government requirements
    - recycling procedures for:
        - office waste
        - service and repair work area waste
    - waste collection schedules
- procedures for promoting workplace products and services, including:
    - basic principles of display and design, including layout and presentation
    - types of display areas, including:
        - signage and fixtures on floor
        - interior or exterior areas
        - permanent or temporary displays
        - publicly accessible areas
        - shelves and windows in areas
    - displaying products, including their rotation, maintenance, storage requirements, pricing and labelling
    - arranging advertising and promotional information.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having maintained the business image of an automotive workplace, e.g. maintenance plans.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace procedures relating to:
  - maintaining equipment and facilities
  - personal presentation, attire and grooming
  - waste disposal and recycling processes
- commercially realistic number of diverse staff working in an automotive workplace.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAMA005 Manage complex customer issues in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to resolve complex customer issues and complaints. Complex customer issues include those caused by cost variations, warranty issues, policy matters, additional repair time and disputed work standards. The unit involves examining the exact nature of a customer issue, communicating effectively, making informed judgements, negotiating an outcome or referring the issue to an appropriate person, and documenting outcomes for continuous improvement.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Management, Leadership and Supervision

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Examine the nature of the issue	1.1 Customer issue and associated feelings and opinions are identified 1.2 Facts relating to the issue are determined using ***appropriate communication skills*** 1.3 Workplace procedures and manufacturer or supplier policy relating to the issue are sourced and interpreted 1.4 Further information is researched as required to confirm or clarify issue 1.5 Rights and responsibilities of customer and workplace are determined and communicated to customer
2. Resolve or escalate the issue	2.1 Implications of the issue for customer and workplace are analysed and determined, and suitable resolution options are identified 2.2 Options for resolving the issue are explained and negotiated with customer according to workplace policies and procedures 2.3 Information required to assist customer in evaluating service and product options that best meet customer needs is provided 2.4 Complaints requiring attention from an external party are actioned by referring to appropriate person according to workplace procedures 2.5 Where a resolution cannot be negotiated and agreed, issue is escalated to appropriate person
3. Document issue and outcome	3.1 Record issue, outcome and customer feedback according to workplace procedures 3.2 Report agreed outcome to appropriate person according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• use feedback and experience obtained from negotiating with customers to inform future customer dealings and workplace procedures.
Reading skills to:	• research and review information about supplier products and services relevant to customer issues.
Writing skills to:	• legibly and accurately complete workplace reports outlining customer issues and associated outcomes.
Oral communication skills to:	• participate effectively in verbal exchanges using collaborative techniques, including active listening and questioning, to gather, clarify and confirm customer issues or complaints • summarise and present key points of information to negotiate effectively to resolve the issue.
Numeracy skills to:	• use mathematical operations, including addition, subtraction, multiplication division and percentages, to determine additional costs, refunds and time implications relating to the issue.

Digital literacy skills to:	• use digital systems and tools to:
	  • communicate with others
	  • access, search and retrieve information relating to products and services.

Initiative skills to:	• present options and alternatives to negotiate solutions to customer issues.
Planning and organising skills to:	• select problem resolution methods and techniques appropriate to the circumstances • use a planned approach to resolving and negotiating a customer's issue or complaint.
Technology skills to:	• use office equipment to prepare written information and to communicate with customers via a range of channels.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Appropriate communication skills must include:	• active listening • questioning techniques • interpreting body language.

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Unit Mapping Information

Equivalent to AURAMA4005 Manage complex customer issues

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAMA005 Manage complex customer issues in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate that they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- manage the complex issues of three different customers in an automotive service and repair environment, including issues involving two of the following:
  - cost variations
  - warranty issues
  - policy matters
  - additional repair time
  - disputed work standards
- one of the above must involve escalating the issue to appropriate person.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- workplace procedures relating to:
  - customer service
  - dealing with dissatisfied customers
  - complaints handling and recommending appropriate action
  - escalating issues to appropriate person
  - reporting and documenting complaints
- common complex customer issues, including disputes concerning:
  - cost
  - work standards
  - time taken or expected for repairs

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  - selection of parts
  - warranties
- key legal requirements relating to customer rights as a consumer, and business obligations under Australian Consumer Law (ACL)
- negotiation, communication and problem-solving strategies, including:
  - active listening
  - questioning techniques
  - interpreting body language
  - negotiating or closing a deal
- automotive product and service knowledge relevant to workplace manufacturers or suppliers in order to recommend:
  - alternative products and services
  - variations in a limited product and service range.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having managed complex customer issues in an automotive workplace, e.g. complaint resolution report.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace procedures relating to customer service and workplace legal obligations
- three different customers with the complex issues specified in the performance evidence
- workplace and manufacturer or supplier product or service information.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAMA006 Contribute to planning and implementing business improvement in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to contribute to the business improvement of an automotive workplace. It involves contributing to the budget process, managing expenses in order to maintain levels of profitability in the specific area of responsibility, and reviewing and contributing to the planning of business promotions and improvements.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Management, Leadership and Supervision

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Review business plan and business performance	1.1 Goals and key performance indicators (KPIs) specified in workplace business plan are analysed and relevance to operational area is assessed 1.2 Gaps and risks to achieving business goals and KPIs are identified 1.3 Risk management strategies to meet business goals and KPIs are identified and developed 1.4 Contingency plan to address possible areas of non-conformance with the plan is developed
2. Assist in developing, implementing and monitoring marketing and promotional strategies	2.1 Key business products or services are analysed to determine a suitable focus for marketing and promotional activities, according to the objectives of the business plan 2.2 Costs and benefits of using different distribution channels and providing different levels of customer service are analysed to determine the appropriate marketing mix 2.3 Agreed marketing and promotional strategies are agreed and implemented 2.4 Marketing activities are monitored and business performance is evaluated according to the objectives and targets of the business plan
3. Seek continuous improvement opportunities	3.1 Business development strategies are regularly reviewed with supervisor 3.2 Operational plans are reviewed to determine possible improvements to business 3.3 New ideas or activities are presented as a business case and discussed with line manager 3.4 Approval is sought from line manager before implementing new ideas and activities

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently • evaluate appropriateness of information for its purpose.
Reading skills to:	• interpret literature containing different forms, including text, diagrams, charts and graphs, and pictures • evaluate text in business plan and associated literature to determine its ability to impart intended meaning to others.
Writing skills to:	• integrate information and ideas from a range of technical information, using appropriate support material and embedded information in a range of sources • logically convey and present textual and numerical information in a structured format appropriate to the audience.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to convey and clarify information about business KPIs and financial targets • summarise and clearly present key points of information in discussions with others about business improvements.
Numeracy skills to:	• use mathematical operations to calculate percentages and ratios and interpret trends in financial data • interpret numerical information embedded in cost-benefit analyses.
Digital literacy skills to:	• use digital systems and tools to access, filter, extract and organise numerical information.
Planning and organising skills to:	• sort and sequence relevant financial data and information to support a position and to present to others.
Problem solving skills to:	• identify and rectify issues within own control to meet KPIs.
Teamwork skills to:	• liaise collaboratively with management and staff to contribute to discussions and planning processes.
Technology skills to:	• select and use business technology to prepare and communicate business information.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURAMA5006 Contribute to business improvement

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAMA006 Contribute to planning and implementing business improvement in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- review the performance of an automotive workplace against its business plan over twelve months
- analyse the effectiveness of the business marketing strategies against sales over twelve months
- develop a strategy to improve business performance based on the above review and analysis.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key features of a business plan, including:
  - purpose of business plan
  - types of business planning, including:
    - feasibility studies
    - strategic, operational, financial and marketing planning
  - setting short, medium and long-term goals and objectives
  - role of key performance indicators (KPIs) and targets
- key components of financial statements, including:
  - cash flow
  - trends
  - areas of risk
- principles and factors to consider in setting budgets, including:

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  - setting targets and stretch targets
  - business profit margins
  - expenditure, including fixed and variable costs
  - calculating service and hourly rates
  - contingency and unplanned events
  - stock holding costs
  - rework components and costs
  - subcontracting costs
- business development principles, and strategies for improving business performance, including:
  - stages in business development
  - basic marketing concepts and principles
  - promotional activities
  - ways to reduce costs and address budget deficits
- report formats for preparing a business case, including financial analysis.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having contributed to business planning processes and improvement activities in an automotive workplace, e.g. business plans.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- financial information for an automotive workplace budget over a period of 12 months
- workplace business plan
- computer, office equipment and technology to prepare financial and written reports.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURANN011 Estimate and quote automotive body repairs

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to prepare vehicle or equipment repair quotations for customer and insurance purposes, including associated materials and labour costs. It involves preparing for the task, estimating repair costs, producing written quotations, and completing workplace documentation.

It applies to those working in the automotive body repair industry. The quotes are for light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles or motorcycles. It does not apply to estimating and quoting on vehicle mechanical and electrical repairs.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Loss Assessment or Repair Quoting - Body

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to quote	1.1 Repair requirements are clarified 1.2 Workplace quotation information and recommended labour time guides are sourced and interpreted 1.3 Job cost estimation and calculation details are sourced and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
2. Estimate and cost repairs	2.1 Required replacement parts and materials are estimated and costed according to workplace procedures 2.2 Direct labour and subcontractor services are estimated and costed according to workplace procedures 2.3 Overheads and mark-up percentages are estimated and costed according to workplace procedures 2.4 Potential quotation variations relating to unsighted damage are noted on the quotation 2.5 Quotation is prepared according to workplace procedures and relevant legislation 2.6 Proposed repair timeframe is assessed and takes into consideration the workplace repair schedule 2.7 Final costs, calculations and other details are verified with workplace supervisor
3. Present quotation to customer	3.1 Quotation is presented to customer or insurer for approval 3.2 Approval is obtained from customer or insurer to commence repairs 3.3 Documentation is completed and quotation filed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• interpret vehicle specifications and job requirements • interpret original equipment manufacturer (OEM) repair procedures and recognised body repair industry time guides.

Writing skills to:	• legibly and accurately complete:
	  • vehicle damage inspection reports
	  • repair quotations.

Oral communication skills	• participate in verbal exchanges using active listening and questioning techniques to gather, clarify and confirm customer

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Skills	Description
to:	information and feedback.
Numeracy skills to:	• use mathematical operations, including addition, subtraction, multiplication, division and percentages, to perform calculations and check accuracy of costs of options and solutions.
Technology skills to:	• use workplace technology when preparing a vehicle body repair quotation.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURANN011 Estimate and quote automotive body repairs	AURANN001 Estimate and quote automotive body repairs	Include additional knowledge evidence requirements, foundation skills and performance criteria	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURANN011 Estimate and quote automotive body repairs

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria and foundation skills:

- inspect three different vehicles or equipment with body damage, and for each vehicle or equipment:
  - estimate the cost of replacement parts and labour
  - prepare a written repair quotation for insurance claim purposes and present to customer

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- workplace procedures and work health and safety (WHS) and occupational health and safety (OHS) requirements relating to estimating and quoting automotive body repairs, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using hand tools and equipment
- relevant legislation relating to trade practices and consumer rights, as well as industry codes of conduct
- location and content of specifications relating to the damaged vehicle or equipment being inspected
- body repair quality standards
- procedures for identifying and determining location and extent of vehicle damage, including understanding recalibration procedures and scanning tools
- procedures for estimating and job costing, including calculating:
  - labour costs, including calculating time to perform work, from:
    - inspecting vehicle damage
    - analysing original equipment manufacturer (OEM) or authorised agency repair procedures

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    - analysing workplace procedures
  - parts costs, including those of:
    - new parts
    - second-hand parts
    - repaired parts
  - costs relating to external products or services
- procedures for gaining evidence to support repair quotation, including:
  - part dismantling of damaged area for repair plan
  - estimating and documenting indirect or unforeseen damage
  - taking and storing photographs.
  -

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having prepared an automotive body repair quotation, e.g. workplace-specific quotations.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive body repair workplace or simulated workplace
- three different vehicles or equipment requiring body repairs
- customer or individual in the role of a customer
- manufacturer and component repair and replacement costing guides
- OEM repair procedures, repair time manuals and labour rates
- office equipment, including calculators, computer, internet and software
- workplace procedures relating to vehicle or machinery body repairs.
-

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Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAQA001 Contribute to quality work outcomes in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to achieve quality work outcomes in own work role by complying with environmental and legal requirements and by planning, preparing and monitoring own work outcomes.

It applies to those working in service, repair, sales or office administration job roles in the automotive industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Quality

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Plan and prepare for	1.1 Quality work outcomes of own work role are identified and

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Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
quality outcomes in own work role	confirmed with supervisor 1.2 Individual quality performance indicators are identified and agreed with supervisor 1.3 Work plans and processes to achieve quality performance indicators are reviewed and discussed with supervisor
2. Achieve and maintain quality work outcomes	2.1 Own work activities are carried out to reflect quality outcomes 2.2 Changes needed to ensure the quality of own work outcomes are implemented according to workplace procedures and within own level of responsibility 2.3 Quality performance indicators of own work are monitored and discussed with supervisor to meet changing circumstances 2.4 Loss and damage are minimised by monitoring work processes, reporting incidents to appropriate person according to workplace procedures, and following established risk control processes 2.5 Improvements and recommendations to improve quality outcomes are documented and communicated to supervisor according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• access and interpret operating instructions and quality information in workplace literature.
Writing skills to:	• legibly and accurately complete workplace forms relating to work quality.
Oral communication skills to:	• clarify and confirm key performance indicators (KPIs) and operational processes using active listening and questioning techniques.
Numeracy skills to:	• carry out mathematical operations relating to time and quantity, including addition, subtraction, multiplication and division.
Initiative skills to:	• recognise a potential improvement to processes or procedures and take appropriate action.

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Skills	Description
Planning and organising skills to:	• prepare work plan, prioritise work and meet performance indicators.
Self-management skills to:	• follow workplace procedures and work within parameters of own work role.
Technology skills to:	• use relevant business or technical equipment to produce quality work outcomes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURAQA2001 Contribute to quality work outcome

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAQA001 Contribute to quality work outcomes in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in the unit's elements, performance criteria and foundation skills:

- contribute to quality work outcomes in three different activities in an automotive workplace, in which the work must involve:
  - identifying quality performance indicators of the activity
  - demonstrating own ability to achieve quality performance indicators
  - demonstrating quality outcome improvements of each workplace activity.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key features of basic quality concepts, including:
  - taking responsibility for own work
  - getting it right the first time
  - reducing variability
  - achieving customer satisfaction
- key features of workplace quality systems and procedures, including:
  - work instructions
  - safe work procedures
  - product specifications
  - equipment maintenance schedules
  - loss and damage control systems covering personal injury, plant, equipment and materials
- work planning processes and performance indicators, including:

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- prioritising tasks and time
- setting targets for own work
- identifying reasonable criteria for evaluating own work outcomes
- identifying measures to avoid wastage
- identifying reasonable criteria to judge internal and/or external customer satisfaction
- identifying processes to ensure a ‘right first time’ approach.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having contributed to the quality of work outcomes in an automotive workplace, e.g. work plans.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- workplace or simulated workplace
- workplace procedures relating to quality requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAQA002 Inspect technical quality of work in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to gather information to inspect work done by colleagues to support workplace quality outcomes. It involves demonstrating discretion, judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.

It applies to those working in service, repair, sales or office administration job roles in the automotive industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Quality

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Gather information to carry out inspection	1.1 Quality inspection specifications and tolerances are accessed and analysed 1.2 Equipment and materials required to support inspection are identified and prepared 1.3 Options for inspection methods are analysed and those most appropriate to the situation are selected and prepared 1.4 ***Inspection information*** is sourced and interpreted
2. Inspect work	2.1 Work to be inspected is identified and confirmed according to workplace procedures 2.2 Inspections of work are conducted at regular intervals and according to manufacturer specifications and workplace procedures, and coordinated with other workplace activities according to workplace quality systems and procedures 2.3 Faults or non-compliances identified are reported to supervisor according to workplace procedures 2.4 Documentation, including non-compliance report, is completed accurately according to workplace procedures
3. Make recommendations	3.1 Corrective action to be carried out is agreed and authorised by the responsible supervisor 3.2 Quality improvements and recommendations are communicated to supervisor according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking quality specifications and procedures.
Writing skills to:	• legibly and accurately record information and complete workplace forms using correct spelling, grammar and technical information.

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Skills	Description
Oral communication skills to:	• participate in verbal exchanges to provide feedback to supervisors and staff on quality problems and issues, using clear language and correct technical terminology.
Numeracy skills to:	• interpret numerical information in product and service quality specifications • use mathematical operations, including addition, subtraction, multiplication and division, to check calibrations, tolerances and work outcomes against quality specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist quality inspection equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Inspection information must include:	• manufacturer and component supplier specifications • legal requirements • safety requirements • workplace environmental requirements • workplace procedures relating to the inspection.

Unit Mapping Information

Equivalent to AURAQA3002 Inspect technical quality of work

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAQA002 Inspect technical quality of work in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out two technical quality inspections in an automotive service and repair workplace
- complete a workplace quality report relating to the above inspections.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- common automotive industry and quality terminology
- quality systems and procedures relating to automotive workplace, including:
  - quality system documentation, including work instructions
  - product specifications
  - equipment maintenance schedules
  - technical procedures and specifically prepared standards
  - vehicle safety requirements
  - work planning processes
  - safe operating procedures
  - work site environmental control measures
  - workplace reporting procedures
- types of quality inspections, including:
  - periodic inspection during job
  - observation at completion of job
  - random inspections
  - component inspections

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  - invoicing compliance
  - checks of rectification of reported and diagnosed problems
- types of quality specifications or performance indicators, including:
  - time, quantity, quality and cost
  - targeting high risk areas
  - measures to avoid wastage
  - internal and/or external customer satisfaction
  - processes to ensure a ‘right first time’ approach
- procedures for carrying out technical quality inspections, including:
  - identifying relevant quality specifications or performance indicators
  - assigning rankings to quality specifications or performance indicators
  - measuring performance against quality specifications or performance indicators
  - documenting quality inspections, including non-compliance reports.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having inspected the technical quality of work in an automotive workplace, e.g. inspection reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive service, repair, sales or office administration workplace or simulated workplace
- commercially realistic situations requiring inspections of technical quality
- work instructions and workplace procedures relating to technical quality inspections.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURAQA003 Maintain quality processes in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to conduct the final quality check on completed work or orders, report on the quality of processes and work outcomes, and recommend improvements to work processes. It involves generating improvements to work processes by seeking input from staff.

It applies to those working in service, repair, sales or office administration job roles in the automotive industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Quality

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Conduct quality check of completed work	1.1 Completed work is checked for compliance with workplace procedures and manufacturer, supplier or customer specifications according to size and importance of job 1.2 Quality inspection documentation is completed according to workplace procedures 1.3 Documents relating to outcomes of quality checks are kept according to workplace procedures or quality system requirements
2. Report on the quality of work outcomes and processes	2.1 Outcomes of quality checks are assessed against workplace performance indicators 2.2 Problems relating to quality of outcomes and processes are identified and documented according to workplace procedures 2.3 Information relating to quality of work outcomes and processes is provided to appropriate persons on a regular basis
3. Generate improvements to work outcomes and processes	3.1 Staff are encouraged to contribute ideas and possible solutions to address identified quality issues 3.2 Options for solving quality issues are generated and benefits of each option evaluated 3.3 Recommended solutions to quality issues are discussed with and reported to supervisor

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• locate and interpret workplace procedures and documentation relating to quality checks, audits and reporting.
Writing skills to:	• legibly and accurately complete workplace forms and quality documents.
Oral communication skills to:	• gather, clarify and confirm information from staff and supervisors about quality issues using active listening and questioning techniques.

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Skills	Description
Numeracy skills to:	• use mathematical operations to calculate quantities and timeframes • calculate percentages and ratios to compare actual data with workplace performance indicators.
Planning and organising skills to:	• sequence and coordinate workplace quality checks.
Problem solving skills to:	• analyse data and quality process problems.
Technology skills to:	• use office equipment to complete, transmit and store quality documentation • operate workplace equipment to perform quality checks.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURAQA3003 Maintain quality systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURAQA003 Maintain quality processes in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- conduct a quality check of three different workplace activities
- for the above activities:
  - analyse the extent to which work outcomes or processes meet expected quality outcomes
  - document one recommendation for improvement to a process or procedure.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key features of basic quality concepts, including:
  - taking responsibility for own work
  - getting it right the first time
  - reducing variability
  - achieving customer satisfaction
- key features of workplace quality systems and procedures, including:
  - work instructions
  - safe work procedures
  - product specifications
  - equipment maintenance schedules
  - loss and damage control systems covering personal injury, plant, equipment and materials
- work planning processes and performance indicators, including:

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  - measures to avoid wastage
  - processes to ensure a ‘right first time’ approach
  - judging internal and/or external customer satisfaction
- procedures for carrying out technical quality inspections, including:
  - identifying relevant quality specifications or performance indicators
  - assigning rankings to quality specifications or performance indicators
  - measuring performance against quality specifications or performance indicators
  - documenting quality inspections, including non-compliance reports
- common procedures for improving work outcomes and processes, including:
  - empowering workers
  - eliminating valueless processes
  - improving training
  - establishing goals
  - implementing gradual changes.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having maintained quality processes when working in an automotive workplace, e.g. workplace quality and continuous improvement documents.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive service, repair, sales or office administration workplace or simulated workplace
- opportunities to conduct workplace quality checks
- workplace quality procedures and related documentation
- commercially realistic number of co-workers and management
- materials, tools and equipment appropriate for completing quality checks.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURASA001 Apply automotive workplace safety fundamentals

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to apply automotive workplace safety fundamentals. It involves preparing for the task, and identifying basic workplace emergency and safety practices and procedures.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Health and Safety

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and apply basic safety practices and procedures in the workplace	1.1 Own work responsibilities and ***workplace procedures*** that achieve a safe work environment are identified and followed 1.2 Hazards associated with the workplace, including fire and safety ***hazards***, are identified and communicated to team members and supervisor 1.3 ***Safety requirements***, including personal safety needs, are identified and confirmed with supervisor as consistent with job requirements
2. Identify and apply basic emergency procedures in the workplace	2.1 Workplace site ***emergency procedures*** are identified 2.2 Location of workplace safety alarms are identified 2.3 Fire safety and firefighting equipment and appliances are identified 2.4 ***Appropriate persons*** to be contacted in the event of accident or sickness of staff and customers are identified 2.5 Workplace evacuation procedures are identified and followed

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information in written instructions relating to recognising and reporting situations.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• interpret simple numerical information in workplace procedures, equipment and materials.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Workplace procedures must include procedures for:	• selecting and using personal protective equipment (PPE) • safe work practices • handling and storing dangerous goods and hazardous substances • emergency, fire and accident.
Emergency procedures must include**:**	• incident or accident reporting • evacuation involving staff and customers • environmental incidents, including incidents or accidents involving dangerous goods and hazardous substances.

Appropriate persons must include:	• those holding a current recognised qualification in either:
	  • first aid
	  • cardiopulmonary resuscitation
	• fire warden and workplace evacuation officer
	• occupational or work health and safety representative.

Unit Mapping Information

Equivalent to AURASA1001 Apply automotive workplace safety fundamentals

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURASA001 Apply automotive workplace safety fundamentals

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- source and interpret the procedure for safely moving one heavy item, and move the item
- source and interpret the procedure for safely handling one dangerous substance in an automotive workplace, and use the substance
- source and interpret the procedure for safely using a piece of electrical equipment in an automotive workplace, and use the equipment
- identify fire safety equipment and its correct application in an automotive workplace
- identify emergency evacuation procedures and responsibilities of self and co-workers in an automotive workplace.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- reasons for ensuring safe work practices in an automotive workplace
- common automotive workplace hazards, including:
  - electricity and water
  - toxic substances
  - flammable materials and fire hazards
  - spillages, waste and debris
- work health and safety (WHS) and occupational health and safety (OHS) procedures and requirements, equipment, and material relating to automotive workplace and personal safety, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - moving heavy items

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  - handling dangerous substances, including:
    - cleaning materials
    - paints
    - fuels and oils
    - chemicals
  - using and storing electrical equipment, including:
    - pre-use checks
    - operating procedures
- location and content of workplace safety procedures
- location and application of fire safety and firefighting appliances and equipment in the workplace
- workplace emergency and evacuation procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having applied knowledge of automotive safety fundamentals in an automotive workplace, e.g. task instructions.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- an automotive workplace or simulated workplace
- tools, equipment and materials used for the automotive service and repair activities specified in the performance evidence
- workplace procedures relating to safe work practices.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURASA002 Follow safe working practices in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify and follow safety and emergency procedures in an automotive workplace. It involves those safety procedures to be followed when using workplace hand tools and hand-held power tools, fixed equipment, and chemicals, and when running vehicles and machinery. It includes the individual's responsibility for safety and emergency response in the event of an accident or incident.

It applies to those working on agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, motorcycles, mobile plant machinery or outdoor power equipment in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Health and Safety

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and follow workplace safety procedures	1.1 ***Workplace procedures*** relating to personal safety are identified and followed 1.2 Unsafe situations and hazards are identified and reported according to workplace procedures 1.3 Machinery and equipment breakdowns are identified and reported according to workplace procedures 1.4 Fire hazards are identified and reported, and precautions taken according to workplace procedures 1.5 Workplace procedures and safety requirements for handling and storing dangerous goods and hazardous substances are identified and followed 1.6 Workplace manual handling procedures are identified and followed 1.7 Participation in any WHS consultative arrangements established by workplace is undertaken
2. Identify and follow workplace emergency procedures	2.1 Workplace emergency procedures regarding illness and accidents are identified and followed 2.2 Safety warning alarms and workplace evacuation procedures are identified and followed 2.3 Firefighting appliances and equipment are located and identified for emergency use and application 2.4 ***Qualified persons*** are identified for contacting in the event of an incident, accident or sickness of self, co-workers, staff, customers and others 2.5 Accident and incident documentation requirements are followed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate sources of information relating to workplace safety requirements.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking procedures required to carry out work safely.
Writing skills to:	• legibly and accurately enter information into workplace safety documents and check sheets.
Oral communication skills to:	• clarify instructions • inform personnel of workplace hazards.
Numeracy skills to:	• match hazardous material weights and volumes to safety data sheets (SDS) and work instructions.
Planning and organising skills to:	• plan own work requirements to achieve required outcomes while working according to safety requirements.
Self-management skills to:	• follow workplace safety requirements without constant supervision • identify and look after own safety.
Problem solving skills to:	• recognise when unsure of safety procedures and seek help • recognise potential workplace hazards and take action.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Workplace procedures must include procedures for:	• selecting and using personal protective equipment (PPE) • identifying hazards • running motor vehicles in the workplace • emergency, fire and accident.

Qualified persons must include:	• those holding a current recognised qualification in any of the following:
	  • first aid
	  • cardiopulmonary resuscitation
	  • fire warden and workplace evacuation
	  • occupational or work health and safety representative.

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Unit Mapping Information

Equivalent to AURASA2002 Apply safe working practices in an automotive workplace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURASA002 Follow safe working practices in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- move two heavy items in an automotive workplace
- use two different dangerous goods in an automotive workplace
- identify fire safety equipment and its correct application in an automotive workplace
- identify emergency evacuation procedures and responsibilities of self and co-workers in an automotive workplace
- raise a safety concern at either a work health and safety (WHS) or occupational health and safety (OHS) consultative meeting
- carry out a hazard inspection in an automotive workplace
- complete an incident report.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- basic aspects of relevant state or territory WHS or OHS legislation, including:
  - employer responsibilities for workplace practices
  - employee responsibilities to participate in WHS practices
  - employee responsibility to ensure own work practices protect the safety of self, other workers and other people in the workplace
- purpose and structure of WHS or OHS workplace committees, including roles of workplace personnel
- personal safety in an automotive workplace, including:
  - hearing protection
  - skin protection

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    - protective clothing
    - protective footwear
    - eye protection
- manual handling, including:
    - storing items
    - planning the lift
    - using correct lifting techniques and equipment
- workplace practices, including:
    - housekeeping
    - observing personal hygiene
    - identifying slip hazards and trip hazards
- meaning of WHS or OHS symbols and signs
- machine and equipment safety, including:
    - using compressed air
    - using machine guards
    - electrical tools, including:
    - checking before use
    - faulty equipment tagging and isolation procedures
    - dangers of using electrical tools around water
    - vehicle lifting equipment, including:
    - using jacks and stands
    - using hoists
    - safe working load (SWL) of jacks and hoists
- vehicle safety, including:
    - engine moving parts
    - engine and exhaust hot components
    - electrical hazards associated with:
        - high voltage ignition systems
        - wearing jewellery while working around high current wiring systems
    - batteries
    - fuel, including petrol, diesel and natural and petroleum gas
    - high voltage in battery electrical and hybrid vehicles
- hazardous materials, including handling and storing:
    - oils
    - brake fluid
    - brake dust
    - chemicals
    - cleaning products
    - safety data sheets (SDS)
- emergency procedures, including:

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- personnel responsibilities
- evacuation procedures and assembly points.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having followed safe work practices while working in an automotive workplace, e.g. documented hazard inspection or incident report.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace procedures and instructions relating to safe work practices
- workplace safety and emergency evacuation procedures
- hazardous chemicals and dangerous goods information
- safety materials and equipment relevant to an automotive workplace
- fire safety equipment
- documents for recording workplace safety, accidents and incidents.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURATA001 Identify basic automotive faults using troubleshooting processes

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to conduct basic troubleshooting processes to identify common automotive faults or problems based on evidence provided by customers.

It applies to those identifying basic automotive faults in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, motorcycles, mobile plant machinery or outdoor power equipment in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Technical

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Confirm nature of fault or problem	1.1 Nature of customer enquiry or concern is determined using appropriate questioning techniques 1.2 Hazards associated with fault identification process are recognised and precautions are taken according to ***safety requirements*** 1.3 Troubleshooting process options are researched and those most appropriate to the circumstances are selected 1.4 Tools and equipment are selected and checked for serviceability according to manufacturer procedures
2. Identify and report on fault	2.1 Automotive system or component relating to fault or problem is identified 2.2 Troubleshooting processes that identify likely cause of fault or problem are followed according to workplace procedures and without causing damage to components or systems 2.3 Information and support to assist in the fault identification process are sought as required 2.4 Report is forwarded to appropriate persons for action according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle or equipment is presented ready for use 3.2 Tools and equipment are checked and stored, and faulty electrical equipment is identified, tagged and according to workplace procedures 3.3 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify own skills and abilities required to perform the job and learning opportunities to gain necessary troubleshooting skills.
Reading skills to:	• interpret safety and workplace requirements required to complete

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	the job task • interpret testing and troubleshooting procedures and flowcharts from manufacturer and workplace instructions and job requirements.
Oral communication skills to:	• seek information from customers • speak clearly to be understood using appropriate automotive technical terms • give feedback to confirm clear understanding.
Planning and organising skills to:	• plan the sequence of work tasks to ensure an efficient job outcome.
Self-management skills to:	• select and use appropriate equipment, materials, processes and procedures • follow workplace documentation, such as codes of practice or operating procedures.
Technology skills to:	• use tools and equipment relating to troubleshooting processes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for selecting and using personal protective equipment (PPE).

Unit Mapping Information

Equivalent to AURATA2001 Identify basic automotive faults using troubleshooting processes

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURATA001 Identify basic automotive faults using troubleshooting processes

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- follow basic troubleshooting processes to identify a basic and familiar automotive fault in three of the following systems:
  - engine
  - engine management system
  - manual transmission
  - automatic transmission
  - driveline
  - final drive
  - braking system
  - hydraulic system
  - electrical system, excluding engine management
  - steering or suspension system
  - wheels and tyres
- report findings on the identified faults in the above systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to identifying basic automotive faults using troubleshooting processes, including procedures for selecting and using personal protective equipment (PPE)
- basic troubleshooting techniques and processes, including:
  - customer questioning skills to facilitate identification of vehicle system fault

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  - use of simple diagnostic charts
- procedures for reporting and documenting findings.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the basic faults they have identified in vehicles or machinery using troubleshooting processes, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- vehicles and components with basic faults
- equipment appropriate for troubleshooting basic automotive faults
- vehicle, machinery and equipment specifications.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURATA002 Read, interpret and apply engineering drawings

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to read, interpret and determine work task and material requirements from engineering drawings. It involves referring to engineering drawings of systems and components when fabricating, modifying and repairing vehicles or equipment.

It applies to those working on agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, motorcycles, mobile plant machinery or outdoor power equipment in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Technical

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for work	1.1 Workplace instructions are used to determine job requirements 1.2 Hazards are recognised and precautions are taken according to safety requirements 1.3 Engineering drawings are sourced that relate to the vehicle or equipment being repaired, manufactured or modified 1.4 Engineering drawings are checked to ensure they are current and include latest amendments
2. Read and interpret engineering drawings	2.1 Symbols, codes, legends and diagrams in engineering drawings are identified and interpreted 2.2 Technical information, material specifications, finishes, dimensions and tolerances are identified and interpreted 2.3 Product, system and components represented by the drawing are identified and interpreted
3. Apply information from engineering drawings	3.1 Information from vehicle and equipment engineering drawings is applied to assist in the fabrication, modification and repair of vehicle and equipment systems and components 3.2 Specific customer and work task requirements are identified as required 3.3 Manufacturing processes are identified from drawings, and materials are selected according to customer requirements and workplace procedures
4. Complete work processes	4.1 Work order is prepared according to engineering drawings and workplace procedures 4.2 Engineering drawings are stored and version control maintained according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify own skills and abilities required to carry out the work task and access learning opportunities to expand them.

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Skills	Description
Reading skills to:	• interpret and understand a combination of graphical illustrations and technical terminology when viewing engineering drawings • interpret technical information and terminology found in workshop manuals and automotive textbooks relating to vehicle and equipment engineering drawings.
Writing skills to:	• legibly and accurately convey written ideas and information relating to engineering drawings, using vehicle component and system terminology.

Oral communication skills to:	• communicate ideas and information when:
	  • confirming work requirements and specifications
	  • reporting work outcomes and problems.

Numeracy skills to:	• use mathematical ideas and techniques to interpret engineering drawing specifications.

Technology skills to:	• use workplace technology to:
	  • access engineering drawings
	  • use specialist tooling, measuring equipment, computerised technology and communication devices
	  • report and document results.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURATA2002 Read and interpret engineering drawings

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURATA002 Read, interpret and apply engineering drawings

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria and foundation skills:

- interpret and apply engineering drawings when fabricating or modifying three different vehicles, vessels or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- terminology, symbols, codes, legends and diagrammatic representations used in automotive engineering drawings
- requirements of quality standards relating to drawings, including relevant Australian Design Rules (ADRs)
- procedures for amending and maintaining version control status for engineering drawings, particularly as they apply to vehicle or equipment fabrication, modification and repairs
- quality standards applicable to maintaining vehicle or equipment engineering drawings and service information
- procedures for reporting work outcomes and maintaining workplace records and information.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having read and interpreted engineering drawings when carrying out fabrication, modification or repairs, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- engineering drawings and work task specifications relating to three different vehicles, vessels or machinery
- engineering drawing standards, including:
  - codes
  - symbols
  - legends
  - measurements
- ADRs.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURATA003 Produce drawings from design concepts

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to produce detailed drawings of objects from design concepts. It involves creating drawings or hand drawn sketches for items, such as mounting brackets for attaching accessories or components to vehicles or equipment. The unit does not involve producing computer-aided design (CAD) drawings.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to produce drawing	1.1 Drawing purpose and design concept are defined and clarified according to workplace procedures

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Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.2 ***Drawing specifications*** are identified and confirmed with appropriate persons 1.3 Operational characteristics of object to be drawn are identified 1.4 Required drawing ***resources*** are selected
2. Draft initial drawing	2.1 ***Initial drawing is drafted*** from prototype model sketch and specifications 2.2 Production notes or special requirements are documented 2.3 Draft drawing is checked for accuracy against specifications and concept prototype drawing, and required approval is sought
3. Complete final drawing	3.1 Final drawing is compared to original design concepts and modified as required within scope of own authority 3.2 Drawing is checked and approved according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate drawing specifications and other relevant information efficiently • keep up-to-date with drawing and sketching processes and new and emerging electronic drawing aids.
Reading skills to:	• interpret drawing objectives and specifications and technical information.
Writing skills to:	• legibly and accurately produce drawing requirements and material lists.
Oral communication skills to:	• communicate with customers and others in the workplace.
Numeracy skills to:	• calculate and list dimensions and specifications in drawings.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Drawing specifications must include:	• dimensions, angles, shapes and component finish • fabrication processes • measurements and specifications • quality and technical information.
Resources must include:	• design concept brief and associated specifications • drawing equipment • object or sub-assembly to be fabricated and drawn.
Drafting initial drawing must include:	• appropriate object dimensions • connection of dimensional points to match drawing.

Unit Mapping Information

Equivalent to AURATA2003 Produce drawings from design concepts

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURATA003 Produce drawings from design concepts

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- produce three detailed technical drawings of objects, automotive products or components from design concepts specific to a vehicle or equipment application
- produce above drawings in both two- and three-dimensional form, and include dimensional points, fabrication notes and product finish requirements
- draw above drawings manually or using electronic drawing aids with appropriate software.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- common automotive terminology
- techniques for translating design concepts into sketches and detailed technical drawings
- technical drawing procedures and specifications
- procedures for making and listing drawing measurements and notes
- procedures for checking, documenting and storing drawings.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to drawings that they have produced from design concepts, e.g. drawings or sketches.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- object, product or sub-assembly to be fabricated and drawn
- design concept brief and associated design specifications
- drawing work plans and instructions
- technical drawing procedures and specifications
- manual drawing equipment or computer and appropriate software.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURATA004 Provide technical guidance

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to assist co-workers with service and repair work by interpreting and providing technical assistance that facilitates on-the-job learning.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Assist co-workers with their work	1.1 Problems arising from previous service and repair work procedures are identified and opportunities for technical guidance are identified

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.2 Technical information is sought and interpreted to aid own understanding, as required 1.3 Supervisor, team leader or colleague with advanced technical knowledge is identified, and assistance is sought, as required 1.4 Technical guidance is provided to co-workers, appropriate to their skill level and need, to assist in determining suitable repair method 1.5 Assistance is provided to co-worker during work, to ensure work is completed to manufacturer specifications 1.6 Potential faults in co-workers' work are identified and precautionary steps are taken to prevent them
2. Provide technical information and instruction to co-workers	2.1 Current technical information is communicated to co-workers as it becomes available 2.2 Co-workers are instructed how to access, interpret and apply technical information
3. Facilitate continuous learning of self and co-workers	3.1 Information is shared to build own and co-workers' skills 3.2 Training opportunities are identified that meet technical and business needs and enhance technical skills of self and co-workers 3.3 Approval to take advantage of training opportunities is sought from supervisor

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret technical information, instructions and requirements in written material to inform technical guidance provided.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills	• clearly and effectively convey information using language, tone and pace accessible to co-workers.

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Skills	Description
to:	
Numeracy skills to:	• interpret numerical information in manufacturer specifications and procedures.
Digital literacy skills to:	• use digital systems and tools to access and organise information relating to technical guidance provided.
Planning and organising skills to:	• structure and sequence information clearly and logically • organise activities relating to providing technical guidance.
Problem solving skills to:	• analyse issues and respond effectively to questions and comments when providing technical guidance.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURATA3004 Provide technical guidance

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURATA004 Provide technical guidance

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- provide technical guidance to three different co-workers on different workplace tasks, in which the work must involve:
  - accessing and interpreting relevant technical information
  - assisting with service and repair work tasks
  - providing technical information and instructions.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key learning styles, including:
  - visual
  - auditory
  - kinaesthetic
- effective communication techniques, including:
  - giving full attention
  - speaking clearly and concisely
  - using appropriate language and non-verbal communication, including:
    - tone of voice
    - body language
- technical knowledge relevant to subject area
- procedures for sourcing and interpreting technical information relating to automotive service and repair.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having provided technical guidance to co-workers in the automotive workplace, e.g. on-the-job training program.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- three different co-workers requiring technical instruction on different tasks
- supervisor, team leader or colleague with advanced technical knowledge.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURATA005 Estimate and quote automotive mechanical and electrical repairs

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to prepare an estimate and quotation to repair the mechanical or electrical systems of vehicles or machinery. It involves preparing an initial estimate of costs, then preparing a detailed quotation for the required work, and presenting the quotation to customer.

It applies to those working in the automotive service and repair industry. It includes quotations for light vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles or motorcycles. The unit does not apply to estimating and quoting vehicle body repair costs.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Common

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Estimate repair or service costs	1.1 Clarify service and repair requirements 1.2 Time requirements for job are estimated from a comparison of previous similar repairs 1.3 Costs associated with replacement parts are estimated 1.4 Parts and work needing to be subcontracted are identified and costs estimated 1.5 Estimate is calculated, feasibility of job is discussed with customer, and agreement is reached to proceed with quote
2. Prepare quotation	2.1 Job labour cost is documented and agreed with workplace supervisor 2.2 Parts and consumables are costed according to workplace pricing procedures 2.3 Quotation variations relating to unsighted damage are noted and prepared for customer acceptance 2.4 Quotation is reviewed by workplace supervisor and finalised
3. Present quotation to customer	3.1 Detailed quotation is provided to customer for approval 3.2 Approval from customer to commence work and undertake any supplementary quotation work is obtained as required 3.3 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• interpret vehicle specifications and job requirements • interpret original equipment manufacturer (OEM) and recommended labour time guides.
Oral communication skills to:	• participate in verbal exchanges using active listening and questioning techniques to gather, clarify and confirm customer information and feedback.

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Skills	Description
Numeracy skills to:	• use mathematical operations, including addition, subtraction, multiplication and division, to perform calculations and check accuracy of costs of options and solutions.
Digital literacy skills to:	• use digital systems and tools to access, search and retrieve information relating to products and services.
Technology skills to:	• use workplace technology related to preparing a vehicle mechanical and electrical service repair quotation.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURATA3005 Estimate complex jobs

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURATA005 Estimate and quote automotive mechanical and electrical repairs

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria and foundation skills:

- inspect four different vehicles or equipment, two with mechanical and two with electrical faults, and:
  - estimate required repair or replacement of parts and labour
  - prepare a written repair quotation for the above vehicles or equipment for customer approval.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- workplace procedures and work health and safety (WHS) and occupational health and safety (OHS) requirements relating to estimating and quoting on repairs, including procedures for:
  - selecting and using personal protection equipment (PPE)
  - manual handling vehicle components and systems
  - using hand tools and equipment
- components of estimates and job costings, including:
  - labour
  - parts
  - costs relating to external products or services required
- original equipment manufacturer (OEM) or authorised agency's service and repair procedures
- process to identify and determine location and extent of failure or faults in vehicle
- evidence to support repair quotation, including:

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  - part dismantle of damaged area for repair plan
  - indirect or unforeseen damage
  - photographs
- vehicle inspection, failure or fault assessment procedures
- service and repair industry standards.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to preparing a repair quotation relating to an automotive mechanical and electrical service and repair quotation, e.g. a written quote.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- four different vehicles requiring mechanical and electrical repairs or service
- automotive mechanical or electrical repair workplace or simulated workplace
- manufacturer and component repair and replacement costing guides
- OEM service and repair time manuals and labour rates
- office equipment, including calculators, computer, internet and software
- workplace procedures relating to vehicle mechanical and electrical repairs or service.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBCA002 Select and adjust bicycles to fit riders

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to select and adjust a bicycle to suit its rider. It involves gathering rider information and matching the bicycle to the rider's ability and cycling requirements, adjusting the bicycle to fit, and completing workplace processes and documentation.

It applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Bicycle

Unit Sector

Sales and Marketing

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to adjust bicycle	1.1 Job requirements are determined from workplace instructions 1.2 Customer cycling requirements and preferences are identified and

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	confirmed 1.3 Physical attributes of customer are assessed through discussion, observation and if appropriate ***measurements*** 1.4 Suitable ***bicycle*** types and configurations are identified to match customer requirements 1.5 Features and benefits of selected bicycle are discussed with customer
2. Adjust bicycle to fit the rider	2.1 Workplace procedures, manufacturer specifications, and ***safety and environmental requirements*** are sourced and interpreted 2.2 Hazards associated with the work are identified and risks are managed 2.3 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 2.4 ***Bicycle components are adjusted*** to match rider's attributes and requirements using specialist tools and equipment and according to workplace procedures. 2.5 Customer test ride of bicycle is observed to confirm riding comfort and efficiency, and further adjustments are made as required
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and bicycle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Oral communication skills to:	• listen actively and use questioning techniques to gather, clarify and confirm customer requirements and feedback • use bicycle terminology that customers understand and relate to.
Numeracy skills to:	• identify customer measurements for bicycle type, size, component and adjustment requirements.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Measurements must include:	• rider height • rider body shape • length of rider’s arms and legs.
Bicycles must include:	• with and without gears • with lever-operated brakes.
Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for manually handling bicycles • environmental requirements, including procedures for trapping, storing and disposing of waste grease and oils.
Adjusting bicycle components must include:	• checking frame size to match rider's physical attributes • checking and adjusting seat setting to fit rider • checking and adjusting handlebars and stem settings to fit rider • checking and adjusting clip-less pedal settings to match rider's needs.

Unit Mapping Information

Equivalent to AURBCA2002 Select and adjust bicycle to fit rider

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBCA002 Select and adjust bicycles to fit riders

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- select, fit and adjust three different bicycles to suit riders with differing requirements and builds.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to adjusting bicycles, including procedures for manually handling bicycles
- environmental requirements, including procedures for trapping, storing and disposing of waste grease and oils
- procedures for use, maintenance and storage of specialist bicycle tools and equipment, including personal protective equipment (PPE)
- bicycle types, categories and trends
- key bicycle terminology
- bio-mechanical principles of cycling
- techniques and procedures for selecting and adjusting bicycles, including:
  - bicycle components and assembly methods
  - bicycle measuring techniques
  - bicycle and component adjustment procedures
- features of rider comfort on a bicycle, including:
  - stability
  - efficiency
  - aerodynamics.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the riders they have measured and fitted to a bicycle, e.g. bicycle order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle retail workplace or simulated workplace
- workplace instructions
- PPE required when fitting bicycle to rider
- bicycle manufacturer specifications
- three riders with differing requirements and build requiring bicycle fittings
- three different bicycle models, including:
  - with and without gears
  - with lever-operated brakes
- tools and equipment appropriate for selecting and adjusting bicycles to fit riders.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBTA001 Remove and tag bicycle components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify and tag a range of bicycle components. It involves preparing for the work, removing and tagging bicycle components by title, job number and bicycle application, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation for entering the bicycle retail, service and repair industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Bicycle

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and tag bicycle components	1.1 Task instruction is interpreted and bicycle to be worked on is identified 1.2 Bicycle component information is sourced and interpreted 1.3 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.4 Tools and equipment are selected and checked according to workplace procedures
2. Remove components	2.1 Bicycle components to be removed are identified 2.2 Components are removed according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to components or systems 2.3 Removed components are inspected and findings recorded according to workplace procedures
3. Tag components	3.1 Tagging procedures are identified 3.2 Removed components are legibly ***tagged*** without causing damage and according to workplace procedures 3.3 Tagged components are stored according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instruction and workplace standards. Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.2 Tools and equipment are checked and stored according to workplace procedures 4.3 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer and workshop literature when seeking removal and inspection procedures and specifications relating to bicycles.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• interpret numeric information in task instructions and part numbers.
Technology skills to:	• use specialist bicycle tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for manually handling bicycles • environmental requirements, including procedures for disposing of waste materials.
Tagged must include:	• component title • component condition • job number.

Unit Mapping Information

Equivalent to AURBTA1001 Remove and tag bicycle components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBTA001 Remove and tag bicycle components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and tag five of the following bicycle components from one bicycle:
  - wheel assembly
  - frame
  - drivetrain assembly
  - steering assembly
  - braking assembly
  - suspension assembly.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing bicycle components, including procedures for manually handling bicycles
- environmental requirements, including procedures for disposing of waste materials
- bicycle types and related key terminology
- bicycle components and their key features
- bicycle accessories and their functions
- types and use of specialist bicycle tools and equipment
- procedures for removing and tagging bicycle components, including:
  - component removal
  - component inspection
  - component tagging, including key information required on tags

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- component storage.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle components that they have removed and tagged, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer bicycle specifications
- one bicycle
- tools, equipment and materials appropriate for removing and tagging bicycle components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBTA005 Restore bicycles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to restore a used or vintage bicycle to original condition and full function. It involves preparing for the work, selecting and using specialist tools and equipment, selecting and matching bicycle components, identifying any required external services, dismantling, reassembling, adjusting and testing the bicycle, and completing workplace processes and documentation.

It applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Bicycle

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
bicycle restoration	1.2 Bicycle type, make and model are identified 1.3 Bicycle specifications and original components are located 1.4 Suppliers of new or used original components are identified and sourced 1.5 Work is planned to minimise component damage and waste, and use time efficiently
2. Inspect bicycle	2.1 Bicycle systems and components are inspected for faults and worn or damaged components, and measurements are taken as required 2.2 Original bicycle condition and specifications are compared with job requirements 2.3 Replacement and repair options for bicycle components, including parts and labour outsourcing, are identified 2.4 Required restoration work and associated cost are documented and customer approval is obtained
3. Dismantle bicycle	3.1 Hazards associated with the work are identified and risks are managed 3.2 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 3.3 Work area is prepared and materials are selected according to job requirements 3.4 Bicycle is dismantled and components are tagged according to workplace procedures and ***safety and environmental requirements***
4. Restore bicycle	4.1 Individual components are repaired as necessary according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Work that cannot be carried out is outsourced as required 4.3 Repaired and replaced bicycle components and accessories are reassembled, fitted to the bicycle with correct fastener tensions, and lubricated and adjusted according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.4 Assembled bicycle is inspected and ***tested*** for correct tension of components and operation, and adjusted as required according to workplace procedures

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
5. Complete work processes	5.1 Final inspection is made to ensure work meets workplace expectations and bicycle is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 5.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation, including inspection reports.
Numeracy skills to:	• interpret numerical information to match component codes, serial numbers and manufacturer specifications • measure bicycle components and use basic mathematical operations, including addition and subtraction, to calculate distances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes • source new or used original bicycle components.
Technology skills to:	• use specialist bicycle tools and equipment in line with workplace procedures.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • manually handling bicycles
	  • working with specialist bicycle tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste grease and oils.

Testing must include testing for:	• gear changing, as required • handling, turning and steering • seat, handlebar, control and reflector position • component fastener tension.

Unit Mapping Information

Equivalent to AURBTA3005 Restore bicycles

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBTA005 Restore bicycles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- restore a used or vintage bicycle and its following components to original condition and full function according to customer requirements and work instructions:
  - frame
  - wheels and rims
  - drivetrain system and gears
  - braking system
  - steering and suspension systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to restoring bicycles, including procedures for:
  - manually handling bicycles
  - working with specialist bicycle tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste grease and oils
- application, purpose and function of key bicycle components, including appropriate new and used parts
- types and use of tools and equipment used to restore, assemble and adjust bicycles
- bicycle types, accessories and component fitting methods
- bicycle restoration procedures, including:
  - procedures for planning bicycle restorations
  - bicycle measuring techniques

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  - bicycle component assembly and adjustment methods
  - bicycle component fitting, testing and adjustment methods, including fastener tensioning methods
- bicycle testing procedures, including post-assembly adjustment and safety checks.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the used or vintage bicycle that they have restored, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions
- bicycle manufacturer specifications
- a used or vintage bicycle with the components specified in the performance evidence requiring restoration
- tools, equipment and materials appropriate for restoring used or vintage bicycles.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBTA007 Provide mechanical support during cycling events

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to work effectively as a bicycle mechanic in a support team for a professional or amateur cycling event. It involves preparing for the work, selecting and using specialist tools and equipment, planning mechanical support for an event, setting up a mobile work station, adjusting and repairing bicycles and components, and completing workplace processes and documentation.

It applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Bicycle

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Establish cycling	1.1 Job role and responsibilities for the relevant event are identified

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
event requirements	1.2 Event regulations, team expectations and communication procedures relevant to own role are identified 1.3 ***Safety and environmental requirements*** and workplace procedures are sourced and interpreted
2. Prepare for event	2.1 Event ***information*** is confirmed 2.2 ***Tools and equipment***, including personal protective equipment (PPE), are selected and checked for serviceability 2.3 Spare parts, wheels and bicycles are selected and prepared for the event 2.4 Components, tools, equipment and personal items are prepared for transportation to event according to team requirements and event conditions
3. Provide mechanical support at event	3.1 ***Temporary work station*** and equipment are set up according to event and safety and environmental requirements 3.2 Support vehicle is prepared as required according to team and event requirements 3.3 Hazards associated with the work are identified and risks are managed 3.4 ***Bicycle repairs***, adjustments and maintenance are carried out within designated timeframes, according to plans developed in conjunction with other members of the support team, and in line with event regulations 3.5 ***Team management is consulted*** as required
4. Complete work processes	4.1 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.2 Work station is packed up and components, tools, equipment and personal items are prepared for transportation ***according to workplace and safety requirements*** 4.3 Event and workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation, including work orders, job cards and event insurance forms.
Oral communication skills to:	• ask questions to clarify instructions and requirements, including with team and event personnel • report event problems and feedback to management.
Numeracy skills to:	• use basic mathematical operations to calculate required adjustments, including matching component codes, serial numbers and manufacturer specifications • use bicycle measuring equipment, including metric and imperial units of measurement.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within required timeframes.
Problem solving skills to:	• identify bicycle defects and repair requirements.
Self-management skills to:	• diagnose and complete required bicycle repairs, adjustments and maintenance when working under event conditions and within tight timeframes.
Teamwork skills to:	• work collaboratively with others in a cycling support team.
Technology skills to:	• use specialist bicycle tools and equipment in line with workplace procedures.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • manually handling bicycles, components, tools and equipment
	  • identifying hazards
	  • using PPE
	• environmental requirements, including procedures for disposing of waste materials.

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Information must include:	• event location • event management • bicycle brand and component specification and websites • event rules and regulations.
Tools and equipment must include:	• portable bicycle stands • hand tools and spare parts • lubricants and hydraulic fluid • pump and compressor.
Temporary work station must include:	• floor and matting • tables, benches and bicycle stands • lighting • bicycle storage • location for spare parts and components • specialist tools and equipment • cleaning agents.
Bicycle repairs must include:	• wheel, tyres and tubes • brakes, chains, gears, steering and suspension components.
Team management consultation must include:	• seeking assistance when difficulties outside scope of own role arise • advising of identified hazards • providing feedback to inform team performance.

Unit Mapping Information

Equivalent to AURBTA3007 Provide mechanical support to cycling events

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBTA007 Provide mechanical support during cycling events

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- set up a temporary mobile mechanical support work station during two different cycling events
- adjust and repair two bicycles during the above events, in which the work must involve:
  - identifying bicycle components to be repaired or replaced
  - applying correct repair, replacement, adjustment and testing procedures
  - working under pressure within required event timeframes.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to providing mechanical support during cycling events, including procedures for:
  - manually handling bicycles, components, tools and equipment
  - identifying hazards
  - using personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- bicycle mechanical principles
- key bicycle components and their specifications
- cycling event categories and bicycle types, including:
  - road, track and mountain
  - community and recreational
- key bicycle and cycling event terminology
- cycling governing bodies and their relevant regulations

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- location and content of workplace procedures relating to adjusting and repairing bicycles during cycling events
- optimum set-up and layout of temporary work station at a cycling event
- types and use of tools and equipment used by mechanical support teams
- repair and maintenance techniques for bicycles and components in a race or event environment, including:
  - testing and adjustment methods
  - component repair, replacement, adjustment and tensioning techniques.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks and where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the cycling events where they have provided mechanical support, e.g. cycling event repair reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- temporary workstation at two different cycling events or simulated event locations, including:
  - floor and matting
  - tables, benches and bicycle stands
  - lighting
  - bicycle storage
- workplace instructions
- workplace and cycling event information
- PPE for mechanical support
- bicycle components
- bicycles that require repair and adjustment at cycling events
- tools and equipment appropriate for providing mechanical support during cycling events, including:
  - portable bicycle stands
  - hand tools and spare parts
  - lubricants and hydraulic fluid

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- pump and compressor.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBTB002 Service bicycle hydraulic braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to service bicycle hydraulic braking systems. It involves preparing for the work, selecting and using specialist tools and equipment, planning, servicing and testing the bicycle braking system, and completing workplace processes and documentation.

It applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Bicycle

Unit Sector

Technical - Brakes

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to service bicycle hydraulic braking system	1.1 Job requirements are determined from workplace instructions 1.2 Manufacturer specifications, workplace procedures and other relevant technical information are accessed and interpreted 1.3 Condition of bicycle ***hydraulic braking system*** is inspected, using visual and physical methods and compared with manufacturer specifications 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.6 Work area is prepared and service sequence, including post-service testing, is planned to avoid damage to bicycle, minimise waste and use time efficiently
2. Carry out service of braking system	2.1 Hydraulic braking system is serviced according to work plan and ***safety and environmental requirements*** 2.2 Hydraulic braking system specifications are checked according to workplace procedures 2.3 Operation of serviced braking system is tested through its full range and adjustments are made as required 2.4 Results and quality issues are reported to authorised personnel as required
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and bicycle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation, including service reports.
Numeracy skills to:	• identify and calculate bicycle hydraulic brake setting adjustments from specifications.
Problem solving skills to:	• identify faults, quality issues and potential problems associated with bicycle hydraulic braking systems during service activities.
Technology skills to:	• use specialist bicycle tools and equipment in line with workplace procedures.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Hydraulic braking system must include:	• master cylinder • hydraulic lines and linkages • hydraulic fluid • cantilever, disc and drum brakes • integrated brake and gear levers.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • manually handling bicycles and their systems
	  • identifying workplace hazards
	  • using tools and equipment, including PPE
	  • identifying safe location for testing brakes
	• environmental requirements, including procedures for disposing of waste materials.

Unit Mapping Information

Equivalent to AURBTB2002 Service bicycle hydraulic braking systems

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Links

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Assessment Requirements for AURBTB002 Service bicycle hydraulic braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- service, adjust and test three different bicycle hydraulic braking systems
- during work on the above three bicycles, service the following:
  - master cylinder
  - hydraulic lines and linkages
  - cantilever, disc and drum brakes
  - integrated brake and gear levers.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to servicing bicycle hydraulic braking systems, including procedures for:
  - manually handling bicycles and their systems
  - identifying workplace hazards
  - using tools and equipment, including personal protective equipment (PPE)
  - identifying safe location for testing brakes
- environmental requirements, including procedures for disposing of waste materials
- bicycle braking system terminology
- application, purpose and function of bicycle hydraulic braking system principles
- key features of hydraulic braking system components, including:
  - master cylinder
  - hydraulic lines and linkages

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  - hydraulic fluid
  - cantilever, disc and drum brakes
  - integrated brake and gear levers
- types and use of tools and equipment used to service bicycle hydraulic braking systems
- techniques and processes for servicing bicycle hydraulic braking systems, including:
  - identification of bicycle hydraulic brake components, materials and specifications
  - fault identification
  - bicycle measuring techniques
  - hydraulic brake servicing and adjustment techniques
  - hydraulic brake testing procedures
- servicing options, including:
  - on- and off-site servicing
  - servicing and adjusting hydraulic braking system components
  - upgrading braking components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle hydraulic braking systems that they have serviced, e.g. service orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace, including location to test bicycle braking system
- workplace instructions detailing job requirements
- PPE required to service bicycle hydraulic braking systems
- manufacturer or brake component specifications and technical information for hydraulic braking system
- three different bicycles with the hydraulic braking system components specified in the performance evidence and requiring servicing

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- tools and equipment appropriate for servicing bicycle hydraulic braking systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBTB003 Repair and overhaul bicycle hydraulic braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to repair and overhaul bicycle hydraulic braking systems. It involves preparing for the work, selecting and using specialist tools and equipment, inspecting, repairing and testing the bicycle braking system, and completing workplace processes and documentation.

It applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Bicycle

Unit Sector

Technical - Brakes

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to repair bicycle	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
hydraulic braking system	1.2 Manufacturer specifications, workplace procedures and other relevant technical information are accessed and interpreted 1.3 Condition of bicycle ***hydraulic braking system*** is inspected using visual inspection methods and by comparing measurements against manufacturer specifications 1.4 Repair options and techniques are identified and confirmed 1.5 Hazards associated with the work are identified and risks are managed 1.6 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.7 Work area is prepared and repair process, including post-repair testing, is planned to avoid damage to bicycle, minimise waste and use time efficiently
2. Carry out repair and overhaul of braking system	2.1 Hydraulic braking system is repaired according to repair plan and ***safety and environmental requirements*** 2.2 Required replacement parts are checked and fitted according to manufacturer specifications 2.3 Hydraulic braking system specifications are checked according to workplace procedures 2.4 Operation of repaired braking system is tested through its full range and adjustments made as required 2.5 Results and quality issues are reported to authorised personnel as required
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and bicycle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation, including repair reports.
Oral communication skills to:	• ask questions to clarify instructions and requirements.
Numeracy skills to:	• identify and calculate bicycle hydraulic brake setting adjustments from specifications.
Problem solving skills to:	• identify faults, quality issues and potential problems associated with bicycle hydraulic braking system during repair activities.
Technology skills to:	• use specialist bicycle tools and equipment in line with workplace procedures.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Hydraulic braking system must include:	• master cylinder • hydraulic lines and linkages • hydraulic fluid • cantilever, disc and drum brakes • integrated brake and gear levers.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • manually handling bicycles and their systems
	  • identifying workplace hazards
	  • using tools and equipment, including PPE
	  • identifying safe location for testing brakes
	• environmental requirements, including procedures for disposing of waste materials.

Unit Mapping Information

Equivalent to AURBTB3003 Repair bicycle hydraulic braking systems

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBTB003 Repair and overhaul bicycle hydraulic braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- repair and overhaul three different bicycle hydraulic braking systems
- during work on the above three bicycles, service the following:
  - master cylinder
  - hydraulic lines and linkages
  - cantilever, disc and drum brakes
  - integrated brake and gear levers.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing and overhauling bicycle hydraulic braking systems, including procedures for:
  - manually handling bicycles and their systems
  - identifying workplace hazards
  - using tools and equipment, including personal protective equipment (PPE)
  - identifying safe location for testing brakes
- environmental requirements, including procedures for disposing of waste materials
- purpose, classification and application of bicycle hydraulic braking system principles
- key features of hydraulic braking system components, including:
  - master cylinder
  - hydraulic lines and linkages

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  - hydraulic fluid
  - cantilever, disc and drum brakes
  - integrated brake and gear levers
- types and use of tools and equipment used to repair and overhaul bicycle hydraulic braking systems
- techniques and processes for repairing and overhauling bicycle hydraulic braking systems, including:
  - identification of bicycle hydraulic brake components, materials and specifications
  - fault identification
  - measuring techniques
  - hydraulic brake adjustment techniques
  - hydraulic brake testing procedures
- repair options, including:
  - on- and off-site repair
  - repairing and adjusting hydraulic braking system components
  - upgrading braking components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle hydraulic braking systems that they have repaired and overhauled, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace, including location to test bicycle braking system
- workplace instructions detailing job requirements
- PPE required to repair and overhaul bicycle hydraulic braking systems
- manufacturer or brake component specifications and technical information for hydraulic braking system

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- three different bicycles with the hydraulic braking system components specified in the performance evidence and requiring repair and overhaul
- tools and equipment appropriate for repairing and overhauling bicycle hydraulic braking systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBTQ001 Service bicycle drivetrain systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to service bicycle drivetrain systems and their components. It involves preparing for the work, selecting and using specialist tools and equipment, inspecting and testing bicycle drivetrain systems and components according to manufacturer specifications, and completing workplace processes and documentation.

This applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Bicycle

Unit Sector

Technical - Driveline and Final Drive

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to service bicycle drivetrain	1.1 Job requirements are determined from workplace instructions 1.2 Manufacturer specifications, workplace procedures and other

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
system	relevant technical information are accessed and interpreted 1.3 Condition of bicycle ***drivetrain system*** is inspected for faults and worn or damaged components using visual inspection methods and by comparing measurements against manufacturer specifications 1.4 Service options and techniques are identified and confirmed with customer 1.5 Replacement parts for drivetrain are identified and sourced as required 1.6 Hazards associated with the work are identified and risks are managed 1.7 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.8 Work area is prepared and service sequence planned to avoid damage to bicycle, minimise waste and use time efficiently
2. Carry out service of drivetrain system	2.1 Bicycle drivetrain system is serviced according to work plan, manufacturer specifications, and ***safety and environmental requirements*** 2.2 Replacement parts are checked and fitted according to manufacturer specifications 2.3 Operation of serviced drivetrain system is tested and adjusted as required according to job requirements and workplace procedures 2.4 Results and quality issues are reported to authorised personnel as required
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and bicycle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedure

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation, including service reports.
Oral communication skills to:	• ask questions to clarify instructions and requirements.
Numeracy skills to:	• complete measurements to determine bicycle drivetrain system condition and operation • identify and calculate bicycle drivetrain system settings and adjustments from specifications.
Self-management skills to:	• select and use appropriate equipment, materials and processes to service bicycle drivetrain systems.
Problem solving skills to:	• identify technical and operational faults and defects, quality issues and potential problems associated with bicycle drivetrain systems during service activities.
Technology skills to:	• use specialist bicycle tools and equipment in line with workplace procedures.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Drivetrain system must include:	• cranks and pedals • chains and chain wheels • cassette, cartridge and internal hub gear systems • manual mechanical, automatic, electro-mechanical and electric gear changers • integrated brake and gear lever systems • fixed and freewheel rear sprockets.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • manually handling bicycles and drivetrain systems
	  • identifying workplace hazards
	  • using tools and equipment, including PPE

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	• environmental requirements, including procedures for disposing of waste materials.

Unit Mapping Information

Equivalent to AURBTQ2001 Service bicycle drivetrain systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBTQ001 Service bicycle drivetrain systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- service the following bicycle drivetrain systems on three different bicycles:
  - derailleur
  - internal hub gear system
  - integrated brake and gear lever system
  - fixed and freewheel rear sprockets.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to servicing bicycle drivetrain systems, including procedures for:
  - manually handling bicycles and drivetrain systems
  - identifying workplace hazards
  - using tools and equipment, including personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- key bicycle terminology relating to drivetrain systems
- types of bicycle drivetrain systems and their system components, including:
  - cranks and pedals
  - chains and chain wheels
  - cassette, cartridge and internal hub gear systems
  - manual mechanical, automatic, electro-mechanical and electric gear changers
  - integrated brake and gear lever systems

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  - fixed and freewheel rear sprockets
- types and use of tools and equipment used to service bicycle drivetrain systems
- techniques and processes for servicing bicycle drivetrain systems, including:
  - identification of bicycle drivetrain components, materials and specifications
  - use of drivetrain lubricants
  - fault identification
  - drivetrain system measuring techniques
  - drivetrain adjustment techniques
  - drivetrain testing procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle drivetrain systems that they have serviced, e.g. service orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace, including location to test bicycle drivetrain system
- workplace instructions detailing job requirements
- PPE required to service bicycle drivetrain systems
- drivetrain component specifications
- drivetrain components specified in the performance evidence
- three different bicycles requiring drivetrain servicing and testing
- tools and equipment appropriate for servicing bicycle drivetrain systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBTQ002 Repair and overhaul bicycle drivetrain systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to repair bicycle drivetrain systems. It involves preparing for the work, selecting and using specialist tools and equipment, inspecting, repairing and testing the bicycle drivetrain system according to manufacturer specifications, and completing workplace processes and documentation.

It applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Bicycle

Unit Sector

Technical - Driveline and Final Drive

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to repair bicycle drivetrain	1.1 Job requirements are determined from workplace instructions 1.2 Manufacturer specifications, workplace procedures and other

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
system	relevant technical information are accessed and interpreted 1.3 Condition of bicycle ***drivetrain system*** is ***inspected*** using visual and physical methods and compared with manufacturer specifications 1.4 Repair options and techniques are identified and confirmed with customer 1.5 Replacement parts for drivetrain are identified and sourced as required 1.6 Hazards associated with the work are identified and risks are managed 1.7 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.8 Work area is prepared and repair process, including post-repair testing, is planned to avoid damage to bicycle, minimise waste and use time efficiently
2. Carry out repairs to drivetrain system	2.1 Bicycle drivetrain system is repaired according to job requirements, manufacturer specifications, and ***safety and environmental requirements*** 2.2 Required replacement parts are checked and fitted according to manufacturer specifications 2.3 Operation of repaired drivetrain system is tested and adjusted as required according to manufacturer specifications and workplace procedures 2.4 Results and quality issues are reported to authorised personnel as required
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and bicycle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation, including repair reports.
Oral communication skills to:	• ask questions to clarify instructions and requirements.
Numeracy skills to:	• identify and calculate bicycle drivetrain system settings and adjustments from specifications.
Self-management skills to:	• select and use appropriate tools, equipment, materials and processes to repair bicycle drivetrain systems.
Problem solving skills to:	• identify technical and operational faults and defects, quality issues and potential problems associated with bicycle drivetrain systems during service activities.
Technology skills to:	• use specialist bicycle tools and equipment in line with workplace procedures.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Drivetrain system must include:	• cranks and pedals • chains and chain wheels • cassette, cartridge and internal hub gear systems • manual mechanical, automatic, electro-mechanical and electric gear changers • integrated brake and gear lever systems • fixed and freewheel rear sprockets.
Inspection must include for:	• faults • overall condition • worn or damaged components.

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Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • manually handling bicycles and drivetrain systems
	  • identifying workplace hazards
	  • using tools and equipment, including PPE
	• environmental requirements, including procedures for disposing of waste materials.

Unit Mapping Information

Equivalent to AURBTQ3002 Repair bicycle drivetrain systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBTQ002 Repair and overhaul bicycle drivetrain systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- repair and overhaul the following bicycle drivetrain systems on two different bicycles:
  - derailleur
  - internal hub gear system
  - integrated brake and gear lever system
  - fixed and freewheel rear sprockets.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing and overhauling bicycle drivetrain systems, including procedures for:
  - manually handling bicycles and their drivetrain systems
  - identifying workplace hazards
  - using tools and equipment, including personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- key bicycle terminology relating to drivetrain systems
- types of bicycle drivetrain systems and their system components specified in the range of conditions
- types and use of tools and equipment used to repair bicycle drivetrain systems
- techniques and processes for repairing and overhauling bicycle drivetrain systems, including:
  - identification of bicycle drivetrain components, materials and specifications
  - fault identification

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- drivetrain system measuring techniques
- drivetrain adjustment techniques
- use of drivetrain lubricants
- drivetrain testing procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle drivetrain systems that they have repaired and overhauled, e.g. repair records.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace, including location to test bicycle drivetrain system
- workplace instructions detailing job requirements
- drivetrain component specifications
- PPE required to repair and overhaul bicycle drivetrain systems
- drivetrain components
- two different bicycles requiring drivetrain repair and overhaul
- tools and equipment appropriate for repairing and overhauling bicycle drivetrain systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBTR002 Install and adjust bicycle electronic gear shifters

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install and adjust electronic gear shifters on bicycles. It involves preparing for the work, selecting components, selecting and using specialist tools and equipment, interpreting fitting instructions, assembling components to bicycles, testing electronic gear shifters according to manufacturer instructions and specifications, and completing workplace processes and documentation.

It applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Bicycles

Unit Sector

Technical – Electrical and Electronic

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install electronic gear shifting components	1.1 Job requirements are determined from workplace instructions 1.2 Electronic gear shifter fitting instructions and specifications are sourced and interpreted 1.3 Electronic gear shifting unit is identified and selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.6 Work is planned and procedures are determined to minimise waste and use time efficiently
2. Install electronic gear shifting components	2.1 Electronic gear shifting components are identified and checked for damage or missing parts according to manufacturer specifications and parts lists 2.2 Replacement options and techniques are identified and confirmed 2.3 Electric cables are installed according to fitting instructions, workplace procedures, and ***safety and environmental requirements*** 2.4 Electronic front junction control boxes and battery are installed according to component manufacturer specifications 2.5 Handle bar brake levers and shifters are fitted and electric cables connected using manufacturer specialist tools 2.6 Front and rear derailleurs are fitted and electric cables connected using manufacturer specialist tools 2.7 Electric cables are secured according to manufacturer specifications and workplace procedures
3. Adjust electronic rear derailleur gear shifting components	3.1 Control device on junction box is activated to allow adjustments to be made 3.2 Chain is positioned on front and rear gear rings according to manufacturer specifications 3.3 Rear derailleur adjustment controls are operated until chain runs smoothly 3.4 Control device on junction box is returned to operational shift mode according to manufacturer specifications 3.5 Rear derailleur operation is checked to ensure it operates according to manufacturer specifications
4. Complete work	4.1 Final inspection is made to ensure work is to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
processes	expectations and bicycle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation, including inspection reports.
Oral communication skills to:	• ask questions to clarify instructions and procedures.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate fitting measurements.
Problem solving skills to:	• identify bicycle electronic gear shifting component defects and potential problems.
Technology skills to:	• use specialist tools and equipment to install and adjust bicycle electronic gear shifting components.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • manually handling bicycles and gear shifters
	  • identifying workplace hazards
	  • using tools and equipment, including PPE
	• environmental requirements, including procedures for disposing of waste materials.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBTR002 Install and adjust bicycle electronic gear shifters

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- install and adjust electronic gear shifting components on two different bicycles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing and adjusting bicycle electronic gear shifters, including procedures for:
  - manually handling bicycles and gear shifters
  - identifying workplace hazards
  - using tools and equipment, including personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- key bicycle terminology relating to electronic gear shifting components
- purpose and features of bicycle electronic gear shifting systems
- principles of electronic gear shifting operation
- types and use of tools and equipment used to install and adjust bicycle electronic gear shifters
- techniques and processes for installing and adjusting bicycle electronic gear shifting components, including:
  - identification of bicycle electronic gear shifter components, materials and specifications
  - fault and damage identification
  - measuring techniques

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  - electronic gear shifter adjustment techniques
  - electronic gear shifter testing procedures
- methods of protecting bicycles from damage when installing and adjusting bicycle electronic gear shifting components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle electronic gear shifters they have installed and adjusted, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace, including location to test bicycle electronic gear shifters
- workplace instructions detailing job requirements
- manufacturer fitting instructions and specifications
- PPE required to install and adjust bicycle electronic gear shifting components
- bicycle electronic gear shifting components
- two different bicycles requiring the installation and adjustment of electronic gear shifting components
- tools and equipment appropriate for installing and adjusting bicycle electronic gear shifters.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBTY001 Repair bicycle frames

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, repair and test bicycle frames. It involves preparing for the work, selecting and using specialist tools and equipment, identifying frame damage, identifying repair options, carrying out repairs according to manufacturer specifications, and completing workplace processes and documentation.

It applies to those working in the bicycle retail, service and repair industry. It does not apply to the repair of carbon fibre bicycle frames.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Bicycle

Unit Sector

Technical - Chassis and Frame

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to repair bicycle	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
frame	1.2 Bicycle manufacturer specifications are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.5 Work area is prepared and work is planned to avoid damage to bicycle, minimise waste and use time efficiently
2. Inspect bicycle frame	2.1 ***Bicycle frame*** to be repaired is identified and checked against job requirements 2.2 Bicycle frame is inspected for faults, wear or damage using visual inspection methods and by comparing measurements against manufacturer specifications 2.3 Repair options for bicycle frame are identified and confirmed with customer 2.4 Required parts and materials are identified and their availability checked 2.5 Work area is prepared and repair sequence, including post-repair testing, is planned to avoid damage to bicycle, minimise waste and use time efficiently
3. Carry out repairs to bicycle frame	3.1 Bicycle frame is ***repaired*** according to workplace instructions, manufacturer specifications, and ***safety and environmental requirements*** 3.2 Required replacement parts are checked and fitted according to manufacturer specifications, and identified problems are reported to appropriate person 3.3 Repaired frame is checked and tested against manufacturer specifications according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and bicycle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation, including repair reports.
Oral communication skills to:	• ask questions to clarify instructions and procedures.
Numeracy skills to:	• identify component codes and serial numbers relating to frame manufacturer specifications.
Technology skills to:	• use specialist bicycle tools and equipment in line with workplace procedures.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Bicycle frame must be from the following types of bicycles:	• mountain bicycle • road bicycle • touring bicycle • hybrid bicycle • recumbent bicycle • BMX bicycle.
Repair must include:	• facing, reaming, and chasing threads and alignment • left and right hand threads.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • manually handling bicycles
	  • identifying workplace hazards
	  • using tools and equipment, including PPE
	• environmental requirements, including procedures for disposing of waste materials.

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Unit Mapping Information

Equivalent to AURBTY3001 Service and repair bicycle frames

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBTY001 Repair bicycle frames

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- repair three different types of bicycle frames according to manufacturer specifications, chosen from the following:
  - mountain bicycle
  - road bicycle
  - touring bicycle
  - hybrid bicycle
  - recumbent bicycle
  - BMX bicycle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing bicycle frames, including procedures for:
  - manually handling bicycles
  - identifying workplace hazards
  - using personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- key bicycle terminology relating to frames
- different bicycle frames specified in the performance evidence and their components, including:
  - braking system
  - wheel sizes
  - drivetrain system

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  - steering system
- types and use of tools, equipment and materials used to repair bicycle frames
- techniques for repairing bicycle frames, including:
  - measuring techniques
  - frame preparation techniques
  - frame repair options
  - testing procedures and safety checks.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle frames that they have repaired, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions detailing job requirements
- manufacturer specifications for bicycle frames
- PPE required to repair bicycle frames
- three different bicycle frames requiring repair
- tools and equipment appropriate for repairing bicycle frames.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBTY002 Design and build bicycle frames

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to design and build a bicycle frame. It involves preparing for the work, selecting and using specialist tools and equipment, identifying different frame materials and components, determining rider measurements, assembling the bicycle frame to customer specifications, and completing workplace processes and documentation.

It applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Bicycle

Unit Sector

Technical - Chassis and Frame

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify frame	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
requirements and prepare to design and build bicycle frame	1.2 ***Customer requirements*** are discussed and confirmed 1.3 Physical attributes of rider and his or her riding style are assessed using sizing cycle, observation and measurements 1.4 Bicycle frame design principles and design are researched and component specifications checked 1.5 Work plan and build instructions are prepared to use materials and time efficiently and minimise waste
2. Design bicycle frame	2.1 Frame is designed to meet customer measurements and requirements, using a bicycle computer-aided design (CAD) program or other means 2.2 Frame tubing requirements are specified in terms of diameter and wall thickness to meet durability and user requirements 2.3 Required parts and materials and their availability are determined 2.4 Frame costs are documented and customer approval is obtained 2.5 Order is placed with suppliers for frame materials, parts and components
3. Prepare for frame building	3.1 ***Frame building methods*** and sequence, and access to required tools and equipment, are planned 3.2 Parts are laid out and checked for damaged or missing components 3.3 Fabrication tooling and jig set-up are selected and checked for serviceability 3.4 Welding, brazing or bonding equipment and materials are set up
4. Build bicycle frame	4.1 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 4.2 Frame building activities are carried out according to design drawing, work plan, and ***safety and environmental requirements*** 4.3 Hazards associated with the work are identified and risks are managed 4.4 Design drawing angles, measurements and frame alignment are checked throughout the building process and adjustments are made as required

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
5. Paint and finish frame	5.1 Frame is prepared for painting and finishing 5.2 Paint or finish is prepared and applied according to job and customer requirements and workplace instructions 5.3 Safety and environmental requirements, including the use of PPE and adequate ventilation during frame painting, are followed 5.4 Visible paint defects are removed or repainted according to workplace procedures and quality requirements
6. Complete work processes	6.1 Final inspection is made to ensure work meets workplace expectations and bicycle is presented ready for use 6.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 6.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 6.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• research information to maintain and update knowledge of bicycle frame designs.
Writing skills to:	• legibly and accurately fill out workplace documentation, including design specifications.
Oral communication skills to:	• ask questions to clarify instructions and requirements, including with customers and suppliers.
Numeracy skills to:	• identify and take customer measurements • identify and interpret codes and serial numbers relating to component specifications • use and interpret sizing cycle electronic measurement equipment • use basic mathematical operations to calculate: • specifications from drawing measurements

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Skills	Description
	• costs of repair.
Self-management skills to:	• select and use appropriate equipment, frame materials, CAD drawings and processes to design and build bicycle frames.
Problem solving skills to:	• apply research information to job requirements.
Technology skills to:	• use bicycle CAD drawing and computer system • use specialist tools and equipment in line with workplace procedures.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Customer requirements must include:	• intended use of bicycle
	• preferred design
	• required construction methods and finish
	• two of the following frame materials:
	  • steel
	  • titanium
	  • composite
	  • aluminium.

Frame building methods must include:	• bicycle CAD drawings • tube cutting, mitreing and preparation • welding • brazing • bonding • using frame jig • controlling distortion and misalignment • painting and surface finishing.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • manually handling bicycle frames
	  • identifying workplace hazards
	  • using PPE
	• environmental requirements, including procedures for disposing

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	of waste materials.

Unit Mapping Information

Equivalent to AURBTY4002 Design and build bicycle frames

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBTY002 Design and build bicycle frames

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- design and build two different bicycle frames to customer specifications, in which the frames must involve two of the following materials:
  - steel
  - titanium
  - composite
  - aluminium.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to building bicycle frames, including procedures for:
  - manually handling bicycle frames
  - identifying workplace hazards
  - using personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- sources of information on bicycle frame design and components
- mechanical principles and requirements of bicycle frame systems and their relationship to braking, wheels, drivetrain and steering systems
- types of bicycle frames and their system components
- types and features of materials used in bicycle frames, including:
  - steel
  - titanium

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    - composite
    - aluminium
- types and use of tools and equipment used to design and build bicycle frames
- procedures for sourcing bicycle parts and materials
- techniques for designing and building bicycle frames, including:
    - application of frame design principles
    - bicycle computer-aided design (CAD) drawing
    - using measurements of customer physical attributes, including:
        - height
        - body shape and weight distribution
        - length of arms and legs
    - using measurements to design a bicycle frame to meet customer requirements, including:
        - head tube length and angle
        - bottom bracket drop
        - seat tube length and angle
        - top tube length
        - saddle setback
        - chain stay length
        - fork rake or offset
        - fork trail and bicycle stability
    - frame construction procedures and techniques, including:
        - component specifications
        - painted, anodised, natural state or polished frame surface
    - welding and bonding techniques
- causes of frame failures and design alternatives to reduce failure.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bicycle frames they have designed and built, e.g. build orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions detailing job requirements and build instructions
- customer build requirements
- relevant technical information and bicycle frame component specifications
- PPE required to build a bicycle frame
- bicycle CAD or other design tools
- bicycle sizing measuring equipment
- bicycle parts and components to build two different bicycle frames specified in the performance evidence
- access to suppliers of bicycle parts
- tools and equipment appropriate for designing and building bicycle frames.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURBTY003 Repair carbon fibre bicycle frames

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to determine the extent of damage to carbon fibre bicycle frames, and undertake the necessary repairs. It involves preparing for the work, selecting and using specialist tools and equipment, assessing frame damage, selecting repair materials, repairing and finishing the carbon fibre frame to manufacturer specifications, and completing workplace processes and documentation.

It applies to those working in the bicycle retail, service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Bicycle

Unit Sector

Technical - Chassis and Frame

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Inspect carbon fibre	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
bicycle frame	1.2 Bicycle history, including riding incidents and accidents, is determined through discussion with customer 1.3 Bicycle frame is inspected for faults or damage using visual inspection methods and by comparing measurements against manufacturer specifications 1.4 Non-destructive testing is arranged, as required 1.5 Hazards associated with the work are identified and risks are managed 1.6 ***Repair assessment***, including replacement options for bicycle frame, is completed 1.7 Repair cost is calculated and documented for customer approval
2. Prepare for repair	2.1 Work area is prepared and repair sequence, including post-repair testing, is planned to avoid damage to bicycle, minimise waste and use time efficiently 2.2 Replacement parts and repair ***materials*** are prepared according to frame manufacturer specifications 2.3 ***Tools and equipment***, including personal protective equipment (PPE), are selected and checked for serviceability
3. Repair carbon fibre frame	3.1 Frame surface is prepared for repair and contaminants are removed 3.2 Repairs to bicycle frame, including carbon fibre tubes and seat stay, are carried out according to repair plan, manufacturer specifications, and ***safety and environmental requirements*** 3.3 Repaired area of frame is sealed according to manufacturer specifications 3.4 Required replacement parts are checked and fitted according to manufacturer specifications 3.5 Tests are completed to ensure fibre frame repairs comply with manufacturer specifications, and problems outside scope of own role are referred to appropriate person 3.6 Carbon fibre bicycle frame is cleaned in preparation for delivery to customer
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and bicycle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation, including repair reports.
Oral communication skills to:	• ask questions to clarify instructions and procedures, including with customers and suppliers.
Numeracy skills to:	• correctly interpret manufacturer specifications • take measurements to determine bicycle frame condition • use basic mathematical operations to calculate cost of repair.
Self-management skills to:	• select and use appropriate equipment, materials and processes to repair and test carbon fibre frames.
Technology skills to:	• set, adjust and use specialist tools and equipment to repair and test carbon fibre frames in line with workplace procedures.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Repair assessment must include:	• bicycle history and cause of damage • frame construction method • cracks, chips, dents, loose joins and misalignment.

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Materials must include:	• carbon fibre fabric and tapes of various grades and weights • unidirectional and woven fabric and braided sock • epoxy resin of repair qualified type • shrink tape • vacuum bag consumables • suitable sandpaper • cleaning materials.
Tools and equipment must include:	• sanding tools • bicycle frame jigs • curing oven.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • manually handling bicycles and frames
	  • identifying workplace hazards
	  • using tools and equipment, including PPE
	• environmental requirements, including procedures for disposing of waste materials.

Unit Mapping Information

Equivalent to AURBTY4003 Assess carbon fibre frames for repair

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURBTY003 Repair carbon fibre bicycle frames

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- assess two different damaged carbon fibre bicycle frames and repair them according to manufacturer specifications.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to assessing and repairing carbon fibre frames, including procedures for:
  - manually handling bicycles and frames
  - identifying workplace hazards
  - using tools and equipment, including personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- key carbon frame bicycle terminology
- structure, properties and characteristics of carbon fibre material
- manufacturing processes of carbon fibre frames
- causes of damage to carbon fibre frames
- types of bicycle frames and their components
- types and use of tools and equipment used to repair carbon fibre bicycle frames
- techniques for repairing carbon fibre bicycle frames, including:
  - type of frame damage and defects
  - non-destructive testing procedures
  - measuring techniques
  - frame preparation techniques

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- frame repair options
- testing procedures and safety checks.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the carbon fibre bicycle frames that they have assessed and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- bicycle workplace or simulated workplace
- workplace instructions detailing job requirements
- carbon fibre bicycle frame manufacturer specifications
- PPE required to repair carbon fibre bicycle frames
- material required to repair carbon fibre bicycle frames
- two different damaged carbon fibre bicycle frames
- tools and equipment appropriate for assessing and repairing carbon bicycle frames.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETA001 Analyse and evaluate electrical and electronic faults in electronic over hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate electrical and electronic faults in the embedded network electronic over hydraulic systems of vehicles or machinery in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

The unit applies to those working in the automotive service and repair industry on network electronic over hydraulic systems in vehicles or machinery, which may be wheeled or track type machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for electronic over hydraulic system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Electronic over hydraulic system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to electronic over hydraulic systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised electronic over hydraulic system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
	  • working with high pressure fluid hazards
	  • tagging out and isolating machines, and wheel chocking
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from hydraulic systems.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURETA5001 Analyse and evaluate electrical and electronic faults in electric over-hydraulic systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETA001 Analyse and evaluate electrical and electronic faults in electronic over hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate an electrical or electronic fault in the electronic over hydraulic systems of two different vehicles or machinery
- the above faults must involve two of the following systems:
  - traction motion control
  - excavator bucket control
  - steering control
  - crane ram control
  - garbage compactor control.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) or occupational health and safety (OHS) requirements relating to analysing and evaluating electrical and electronic faults in electronic over hydraulic systems, including procedures for:
  - identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
  - working with high pressure fluid hazards
  - tagging out and isolating machines, and wheel chocking
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from electronic over hydraulic systems
- principles and processes involved in planning and implementing analysis and evaluation of electrical and electronic faults in electronic over hydraulic systems

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- design and planning of diagnostic procedures of electronic over hydraulic system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - electrical faults
- procedures for analysing and evaluating electronic over hydraulic system faults, including:
  - system failure analysis
  - component failure analysis
- types, functions, operation and limitations of electronic over hydraulic systems, including:
  - gateway network control module
  - bus network topography
  - hydraulic control module functions
  - associated network electronic over hydraulic system components
  - sensor and actuator control and monitoring systems
  - control signal circuits
  - operator joystick control devices
  - solenoid and proportional valve control of hydraulic fluid
- testing procedures for electronic over hydraulic systems, including the use of:
  - digital multimeter
  - scan tool
  - oscilloscope
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate electrical and electronic faults in electronic over hydraulic systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to electronic over hydraulic systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electronic over hydraulic systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer electronic over hydraulic system specifications
- two different vehicles or machinery with faults in the electronic over hydraulic systems specified in the performance evidence
- diagnostic tools and equipment for vehicle or machinery electronic over hydraulic system fault diagnosis, including:
  - digital multimeter
  - scan tool
  - oscilloscope
- tools, equipment and materials appropriate for analysing and evaluating electronic over hydraulic systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETA002 Analyse and evaluate electrical and electronic faults in body management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate electrical and electronic faults in the embedded network body management systems of vehicles and machinery in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry on embedded network body management systems in vehicles or machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for body management system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Body management system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to body management systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised body management system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURETA5002 Analyse and evaluate electrical and electronic faults in safety systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETA002 Analyse and evaluate electrical and electronic faults in body management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate an electrical or electronic fault in the embedded network body management systems of two different vehicles or machinery
- the above faults must involve two of the following systems:
  - vehicle or machinery access
  - safety restraint
  - vehicle or machinery infotainment
  - theft deterrent
  - monitoring and tracking
  - air conditioning and heating, ventilation and air conditioning (HVAC).

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in body management systems, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
- principles and processes involved in planning and implementing analysis and evaluation of body management system faults
- design and planning of diagnostic procedures of body management system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults

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    - electrical faults
- procedures for analysing and evaluating body management system faults, including:
    - system failure analysis
    - component failure analysis
- types, functions, operation and limitations of body management systems, including:
    - gateway network control module
    - bus network topography
    - body control module (BCM) functions
    - sensor and actuator control and monitoring systems
    - control signal circuits
- testing procedures for body management systems, including the use of:
    - digital multimeter
    - scan tool
    - oscilloscope
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate electrical and electronic faults in body management systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - freeze frame data
    - waveforms
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to body management systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the body management systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer body management system specifications
- two different vehicles or machinery with faults in the body management systems specified in the performance evidence
- diagnostic equipment for body management system fault diagnosis, including:
  - digital multimeter
  - scan tool
  - oscilloscope
- tools, equipment and materials appropriate for analysing and evaluating body management systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETA003 Analyse and evaluate electrical and electronic faults in monitoring and protection systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate electrical and electronic faults in the embedded network monitoring and protection systems of vehicles or machinery in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry on network monitoring and protection systems in vehicles or machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for embedded network monitoring and protection system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Monitoring and protection system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to monitoring and protection systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised monitoring and protection system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURETA5003 Analyse and evaluate electrical and electronic faults in monitoring and protection systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETA003 Analyse and evaluate electrical and electronic faults in monitoring and protection systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate an electrical or electronic fault in the embedded network monitoring and protection systems of two different vehicles or machinery
- the above faults must involve two of the following:
  - monitoring system (excluding monitoring control module)
  - monitoring control module
  - protection system (excluding protection control module)
  - protection control module.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in monitoring and protection systems, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
- principles and processes involved in planning and implementing analysis and evaluation of electrical and electronic faults in monitoring and protection systems
- design and planning of diagnostic procedures, including procedures for diagnosing:
  - sensor and actuator mechanical faults
  - electrical faults
- types, functions, operation and limitations of monitoring and protection systems, including:

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  - gateway network control module
  - bus network topography
  - body control module (BCM) functions
  - sensor and actuator control and monitoring systems
  - control signal circuits
- testing procedures for network monitoring and protection management systems, including the use of:
  - digital multimeter
  - scan tool
  - oscilloscope
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate electrical and electronic faults in monitoring and protection systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to monitoring and protection systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the monitoring and protection systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer monitoring and protection system specifications
- two different vehicles or machinery with monitoring and protection system faults
- diagnostic equipment for monitoring and protection system fault diagnosis, including:
  - digital multimeter
  - scan tool
  - oscilloscope
- tools, equipment and materials appropriate for analysing and evaluating monitoring and protection systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETA004 Analyse and evaluate electrical and electronic faults in convenience and entertainment systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate electrical and electronic faults in the embedded network convenience and entertainment systems of vehicles or machinery in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry on network convenience and entertainment systems in vehicles or machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for embedded network convenience and entertainment system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Convenience and entertainment system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to convenience and entertainment systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calibrate testing equipment and present analytical results.
Planning and organising	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within

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Skills	Description
skills to:	workplace timeframes.
Technology skills to:	• use specialised convenience and entertainment system diagnostic equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURETA5004 Analyse and evaluate electrical and electronic faults in convenience and entertainment systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETA004 Analyse and evaluate electrical and electronic faults in convenience and entertainment systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate an electrical or electronic fault in the embedded network convenience and entertainment systems of two different vehicles or machinery
- the above faults must involve two of the following:
  - convenience system (excluding convenience control module)
  - convenience control module
  - entertainment system (excluding entertainment control module)
  - entertainment control module.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in convenience and entertainment systems, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
- principles and processes involved in planning and implementing analysis and evaluation of electrical and electronic faults in convenience and entertainment systems
- design and planning of diagnostic procedures of convenience and entertainment system faults, including procedures for diagnosing:
  - electrical faults
  - electronic faults

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- procedures for analysing and evaluating electrical and electronic faults in convenience and entertainment systems, including:
  - system failure analysis
  - component failure analysis
- types, functions, operation and limitations of convenience and entertainment systems, including:
  - gateway network control module
  - bus network topography
  - body control module (BCM) functions
  - associated network convenience and entertainment system components
  - sensor and actuator control and monitoring systems
  - control signal circuits
- testing procedures for convenience and entertainment systems, including the use of:
  - digital multimeter
  - scan tool
  - oscilloscope
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate electrical and electronic faults in convenience and entertainment systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to convenience and entertainment systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to convenience and entertainment systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer convenience and entertainment system specifications
- two different vehicles or machinery with convenience and entertainment system faults
- diagnostic equipment for convenience and entertainment system fault diagnosis, including:
  - digital multimeter
  - scan tool
  - oscilloscope
- tools, equipment and materials appropriate for analysing and evaluating convenience and entertainment systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETA005 Analyse and evaluate electrical and electronic faults in theft-deterrent systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate electrical and electronic faults in the embedded network theft-deterrent systems of vehicles or machinery in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry on network theft-deterrent systems of vehicles or machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for embedded network theft-deterrent system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Theft-deterrent system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to theft-deterrent systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calibrate testing equipment and present analytical results.
Planning and organising	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within

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Skills	Description
skills to:	workplace timeframes.
Technology skills to:	• use specialised theft-deterrent system diagnostic equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURETA5005 Analyse and evaluate electrical and electronic faults in theft-deterrent systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETA005 Analyse and evaluate electrical and electronic faults in theft-deterrent systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate an electrical or electronic fault in the embedded network theft-deterrent systems of two different vehicles or machinery
- the above faults must involve two of the following systems:
  - locking and securing
  - passive entry
  - integrated alarm
  - engine immobiliser
  - remote access.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in theft-deterrent systems, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
- principles and processes involved in planning and implementing analysis and evaluation of electrical and electronic faults in theft-deterrent systems
- design and planning of diagnostic procedures for faults in theft-deterrent systems, including procedures for diagnosing:
  - electrical faults
  - electronic faults
- types, functions, operation and limitations of theft-deterrent systems, including:

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  - gateway network control module
  - bus network topography
  - body control module (BCM) functions
  - associated embedded network theft-deterrent system components
  - sensor and actuator control and monitoring systems
  - control signal circuits
- testing procedures for theft-deterrent systems, including the use of:
  - digital multimeter
  - scan tool
  - oscilloscope
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate electrical and electronic faults in theft-deterrent systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to theft-deterrent systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the theft-deterrent systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer theft-deterrent system specifications
- two different vehicles or machinery with faults in the theft-deterrent systems specified in the performance evidence
- diagnostic equipment for theft-deterrent system fault diagnosis, including:
  - digital multimeter
  - scan tool
  - oscilloscope
- tools, equipment and materials appropriate for analysing and evaluating theft-deterrent systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETA006 Analyse and evaluate electrical and electronic faults in air conditioning and HVAC systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate electrical and electronic faults in embedded network air conditioning and heating, ventilation and air conditioning (HVAC) systems of vehicles or machinery in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry on the air conditioning and HVAC systems of vehicles or machinery.

Licensing requirements apply to this unit. Users are advised to check with the relevant regulatory authority.

Competency Field

Electrical

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for embedded network air conditioning and HVAC system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Air conditioning and HVAC system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, ***regulatory and licensing requirements***, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to air conditioning and HVAC systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised air conditioning and HVAC system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with refrigerants at boiling point given risk of frostbite
	  • working with system lubricants, including carcinogenic oils
	  • handling flammable refrigerants
	  • using personal protective equipment
	  • identifying fire safety equipment
	• environmental requirements, including procedures for preventing loss of refrigerant to the atmosphere.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.
Regulatory and licensing requirements must include those of:	• Australian Refrigeration Council (ARCtick) • Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners • Australian Design Rules (ADRs).

Unit Mapping Information

Equivalent to AURETA5006 Analyse and evaluate electrical and electronic faults in climate-control systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETA006 Analyse and evaluate electrical and electronic faults in air conditioning and HVAC systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate an electrical or electronic fault in the air conditioning and heating, ventilation and air conditioning (HVAC) systems of two different vehicles or machinery
- the above faults must involve two of the following:
  - compressor system
  - control module
  - system pressure and temperature sensor
  - erratic performance of air conditioning and HVAC system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in air conditioning and HVAC systems, including procedures for:
  - working with refrigerants at boiling point given risk of frostbite
  - working with system lubricants, including carcinogenic oils
  - handling flammable refrigerants
  - using personal protective equipment
  - identifying and using fire safety equipment
- environmental requirements, including procedures for preventing loss of refrigerant to the atmosphere

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- principles and processes involved in planning and implementing analysis and evaluation of electrical and electronic faults in air conditioning and HVAC systems
- design and planning of diagnostic procedures for faults in air conditioning and HVAC systems, including procedures for diagnosing:
  - electrical faults
  - electronic faults
- types, functions, operation and limitations of air conditioning and HVAC systems, including:
  - gateway network control module
  - bus network topography
  - body control module (BCM) functions
  - associated network air conditioning and HVAC system components
  - sensor and actuator control and monitoring systems
  - control signal circuits
- testing procedures for air conditioning and HVAC systems, including the use of:
  - digital multimeter
  - scan tool
  - oscilloscope
  - manifold and gauge set
  - recovery unit
  - vacuum pump
  - electronic leak detector
  - nitrogen cylinder and regulator
  - digital vacuum gauge (vacrometer)
  - electronic scales
  - oil injector
  - infra-red thermometer (pyrometer)
  - electronic temperature probe
  - valve core removing or replacement tool
  - humidity detector (psychrometer)
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate electrical and electronic faults in air conditioning and HVAC systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
- procedures for documenting and reporting the analysis and evaluation process

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- regulatory and licensing requirements relating to air conditioning and HVAC systems, including those of:
  - Australian Refrigeration Council (ARCtick)
  - Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
  - Australian Design Rules (ADRs).

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air conditioning and HVAC systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive service and repair workplace or simulated workplace
- workplace instructions
- manufacturer air conditioning and HVAC system specifications
- regulatory and licensing requirements, including:
  - Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
  - Australian Design Rules (ADRs)
- two different vehicles or machinery with air conditioning and HVAC system faults specified in the performance evidence
- diagnostic equipment for air conditioning and HVAC systems
- tools, equipment and materials appropriate for analysing and evaluating air conditioning and HVAC systems.

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Links

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AURETB002 Analyse and evaluate electrical and electronic faults in dynamic control management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate electrical and electronic faults in embedded network dynamic control management systems in vehicles or machinery in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method.

The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions. These systems include the functions of an electronic braking control module (EBCM), such as anti-lock braking, brake assist, descent control, electronic brake force distribution, electronic park brake, hill start assist, stability control, traction control and active roll-over protection.

It applies to those working in the automotive service and repair industry on embedded network dynamic control management systems of vehicles or machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical – Brakes

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for dynamic control management system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Dynamic control management system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to dynamic control management systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calibrate testing equipment and present analytical results.
Planning and organising	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within

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Skills	Description
skills to:	workplace timeframes.
Technology skills to:	• use specialised dynamic control management system diagnostic equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURETB5002 Analyse and evaluate electrical and electronic faults in braking systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETB002 Analyse and evaluate electrical and electronic faults in dynamic control management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate an electrical or electronic fault in the dynamic control management systems of two different vehicles or machinery
- the above faults must involve two of the following:
  - anti-lock braking system (ABS)
  - ABS and integrated traction control system
  - traction and stability control system
  - electronic braking control module (EBCM).

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in dynamic control management systems, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
- principles and processes involved in planning and implementing analysis and evaluation of electrical and electronic faults in dynamic control management systems
- design and planning of diagnostic procedures for faults in dynamic control management systems, including procedures for diagnosing:
  - electrical faults
  - electronic faults

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- types, functions, operation and limitations of dynamic control management systems, including:
  - gateway network control module
  - bus network topography
  - body control module (BCM) functions
  - associated network dynamic control management system components
  - sensor and actuator control and monitoring systems
  - control signal circuits
  - ABS
  - stability control systems (SCS)
  - traction control systems (TCS)
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate electrical and electronic faults in dynamic control management systems
- testing procedures for dynamic control management systems, including the use of:
  - digital multimeter
  - scan tool
  - oscilloscope
  - four-wheel dynamometer
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate electrical and electronic faults in dynamic control management systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to dynamic control management systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the dynamic control management systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer dynamic control management system specifications
- two different vehicles or machinery with faults in the dynamic control management systems specified in the performance evidence
- diagnostic equipment for dynamic control management systems
- tools, equipment and materials appropriate for analysing and evaluating dynamic control management systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETD011 Diagnose and repair electronically controlled steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to diagnose and repair faults in electronically controlled steering systems. These systems include two-wire high and low speed (CAN-bus) and single wire low speed (LIN-bus) networked circuits in vehicle or machinery embedded network electronic control systems. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

This unit applies to those working within the automotive electrical service and repair industry. The electronically controlled steering systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical - Steering and Suspension

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Diagnose electronically controlled steering system	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret diagnostic information in order to identify diagnostic options required for the job 1.3 Identify hazards and environmental issues, assess potential risks, and implement control measures in line with workplace policies 1.4 Identify diagnostic tools and equipment required for the job and examine for serviceability

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	1.5 Perform diagnostic tests according to workplace procedures and workplace health and safety requirements 1.6 Examine diagnostic test results to identify causes of faults, report findings and make recommendations for necessary repairs or adjustments according to workplace procedures
2. Repair and test electronically controlled steering system	2.1 Obtain and interpret repair information in order to identify repair options required for the job 2.2 Identify repair tools, equipment and materials for the job and examine for serviceability 2.3 Carry out repairs or component replacements and adjustments according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements to confirm fault rectification and repair any issues identified
3. Complete work processes	3.1 Carry out final inspection to ensure work meets workplace expectations and vehicle or machinery is ready for use 3.2 Clear work area and dispose of waste or recycle materials according to workplace procedures 3.3 Examine and store tools and equipment, ensuring faulty electrical equipment is identified, tagged and isolated according to workplace procedures 3.4 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of electronically controlled steering systems information efficiently
Reading skills to:	• read and interpret information from workplace procedures and documentation when seeking electronically controlled steering systems specifications and procedures
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used
Oral communication skills to:	• clarify instructions • report diagnostic findings • make repair recommendations

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Numeracy skills to:	• use basic mathematical operations, including addition and subtraction • calculate deviations from manufacturer specifications • match electronically controlled steering system components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • measure voltage, current and resistance • interpret vehicle or machinery electrical measurements and readings
Planning and organising skills to:	• plan own work requirements • prioritise actions to achieve required outcomes • ensure tasks are completed within workplace timeframes
Technology skills to:	• use specialised equipment, including multimeters • use diagnostic scan tools

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURETD011 Diagnose and repair electronically controlled steering systems (Release 1)	AURETD001 Diagnose and repair electronically controlled steering systems (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Combination of performance elements to create three performance criteria. Removal of references to OHS requirements. Removal of range of conditions. Explicit reference to the use of diagnostic scan tools in foundation skills. Addition of minor elements to knowledge evidence. Addition of assessor	Equivalent

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		requirements.	

Links

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Assessment Requirements for AURETD011 Diagnose and repair electronically controlled steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate a diagnosis and repair of electronically controlled steering systems that safely follows workplace procedures to meet required outcomes. This includes:

- diagnosis and repair of a fault within two of the following electronically controlled steering systems of two different vehicles or machinery:
  - steering wheel torque sensor circuit
  - steering wheel angle sensor circuit
  - wheel speed sensor circuit
  - ultrasonic position sensor self-parking system circuit
  - power steering motor control circuit
  - power steering hydraulic pump control circuit
  -

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures relating to the diagnosis, testing and repair of electronically controlled steering systems, including:

- how to locate and interpret manufacturers specifications or equivalent documentation and workplace procedures for the diagnosis and repair of electronically controlled steering systems
- the following workplace health and safety requirements for diagnosis and repair of electronically controlled steering systems:
  - procedures for using specialised tools and equipment
  - knowledge of the required personal protective equipment (PPE)
  - procedures for identifying hazards and controlling risks associated with working with high pressure and high temperature steering systems

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- environmental requirements for diagnosis, testing and repair of electronically controlled steering systems
- the following diagnostic testing procedures for electronically controlled steering systems, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - freeze frame data
    - waveforms
  - using diagnostic flow charts
- the following electrical systems testing procedures:
  - accessing electrical terminals
  - using test probes without damaging connectors, fuse holders or wiring
  - undertaking resistance tests
  - undertaking voltage drop tests
  - testing open circuits
  - testing short circuits
  - checking shorts to signal, power circuits and grounds
- the following repair procedures for electronically controlled steering systems:
  - removing and replacing electronically controlled steering system components
- the following post-repair testing procedures for electronically controlled steering systems:
  - DTC clearing procedures
  - static and dynamic performance tests of steering systems
- workplace housekeeping and documentation procedures

Electronically controlled power steering systems information, including:

- the operating principles of:
  - adaptive steering topography, inputs and outputs
  - typical vehicle or machinery systems equipped with adaptive steering systems
- the purpose and operation of:
  - adaptive steering control modules
  - control sensors and actuators
  - actuators, including pulse width modulated (PWM)
- the purpose and operation of the following steering control module functions:
  - control of hydraulic fluid settings
  - pressure control valve settings
  - power steering pump operation
  -

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Assessment Conditions

The assessment must:

- include access to:
  - an automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to diagnose and repair activity
  - workplace procedures relating to diagnose and repair activity
  - manufacturer electronically controlled steering systems specifications and procedures or equivalent documentation to complete diagnose and repair activity
  - two different vehicles or machinery with faults in the electronically controlled steering system components specified in the performance evidence
  - diagnostic equipment for electronically controlled steering systems, including:
    - multimeter
    - scan tool
  - tools, equipment and materials required for repairing electronically controlled steering systems of vehicle and machinery
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards
-

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETE001 Analyse and evaluate electrical and electronic faults in engine management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate electrical and electronic faults in embedded network engine management systems of vehicles or machinery in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry on embedded network engine management systems of vehicles or machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Engines

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for engine management system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Engine management system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to engine management systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised engine management system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • working on vehicle systems with ignition high voltages • identifying hazards and controlling risks associated with wearing jewellery while around high current wiring systems • working with high pressure fuel systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURETE5001 Analyse and evaluate electrical and electronic faults in engine management systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETE001 Analyse and evaluate electrical and electronic faults in engine management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate an electrical or electronic fault in the engine management systems of two different vehicles or machinery
- the above faults must involve two of the following systems:
  - direct injection diesel engine management system
  - common rail diesel engine management system
  - distributor-less electronic ignition petrol engine management system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in engine management systems, including procedures for:
  - working on vehicle systems with ignition high voltages
  - identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
  - working with high pressure fuel systems
- principles and processes involved in planning and implementing analysis and evaluation of electrical and electronic faults in engine management systems
- design and planning of diagnostic procedures for faults in engine management systems, including procedures for diagnosing:
  - electrical faults
  - electronic faults

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- types, functions, operation and limitations of engine management systems, including:
  - spark ignition engine management systems
  - diesel fuel injection systems
  - gateway network control module
  - bus network topography
  - associated network engine management systems
  - sensor and actuator control and monitoring systems
  - control signal circuits
- testing procedures for engine management systems, including the use of:
  - digital multimeter
  - scan tool
  - oscilloscope
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate electrical and electronic faults in engine management systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to engine management systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine management systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine management system specifications
- two different vehicles or machinery with faults in the engine management systems specified in the performance evidence
- diagnostic equipment for engine management systems, including:
  - digital multimeter
  - scan tool
  - oscilloscope
- tools, equipment and materials appropriate for analysing and evaluating engine management systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH001 Depower and reinitialise battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to depower and reinitialise battery electric vehicles (BEVs). It involves ensuring the vehicle high voltage (HV) rechargeable energy storage system (RESS) is isolated before commencing any service or repair work. It also involves calibrating vehicle systems that may need resetting once the energy storage system is reinitialised. Importance is placed in the unit on applying RESS and separated extra low voltage (SELV) electrical safety procedures.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Hybrid Vehicle and Battery Electric Vehicle

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to depower and reinitialise BEV	1.1 Job requirements are determined from workplace instructions 1.2 Workplace procedures and manufacturer specifications are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** and AS 5732 Electric vehicle operations - Maintenance and repair 1.4 ***Tools and equipment*** are selected and checked for serviceability 1.5 Vehicle is identified with warning tag or sign to indicate potential hazards
2. Deactivate vehicle RESS	2.1 SELV supply is located and disconnected according to manufacturer specifications 2.2 RESS service plug or manual service disconnect is located and removed to depower vehicle HV RESS according to manufacturer specifications 2.3 Vehicle is stabilised and checked for zero residual voltage according to manufacturer procedures 2.4 RESS service plug or manual service disconnect is secured and retained to prevent refitting by third party
3. Reinitialise vehicle RESS	3.1 SELV and RESS service plug or manual service disconnect are reconnected in the correct order and vehicle is reactivated 3.2 Diagnostic test equipment is used to check and recalibrate subsystems affected by depower process as required 3.3 RESS and vehicle subsystems are checked for correct operation 3.4 Post-reactivation faults are reported according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and diagrams in depowering and reinitialising information in manufacturer specifications, and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• listen to workplace instructions and ask questions to clarify job requirements • participate in verbal exchanges when depowering and reinitialising BEVs.
Numeracy skills to:	• match electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret vehicle electrical measurements and readings on digital and analogue gauges • interpret measurements of residual voltage and high voltages relating to BEVs.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify faults in reinitialising process that need to be reported.
Technology skills to:	• use specialised tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:

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include:	• identifying hazards and controlling risks associated with:
	  • working with high voltages on BEV electrical systems
	  • wearing jewellery while working around high electrical currents
	• determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
	  • using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
	  • identifying and using firefighting equipment as appropriate
	  • using the 'one hand' rule
	  • following live system warning tags and signs
	  • depowering vehicle
	  • isolating HV RESS electrical supply
	  • stabilising vehicle electrical system.

Tools and equipment must include:	• those specified in the specific vehicle service maintenance procedures, including:
	  • digital multimeter with Cat III 1000 volt rating
	  • insulation tester
	  • residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
	  • scan tool.

Unit Mapping Information

Equivalent to AURETH3001 Depower battery electric vehicles

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH001 Depower and reinitialise battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- safely depower the rechargeable energy storage system (RESS) and separated extra low voltage (SELV) system of two different battery electric vehicles (BEVs), and stabilise the vehicles ensuring that no residual high voltage (HV) is measured
- safely reinitialise each BEV's RESS and SELV system and confirm correct vehicle operation.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to depowering and reinitialising BEVs, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages on BEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
    - identifying and using firefighting equipment as appropriate
    - using the 'one hand' rule
    - following live system warning tags and signs
    - depowering vehicle
    - isolating HV RESS electrical supply

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    - stabilising vehicle electrical system.
- requirements of AS 5732 Electric vehicle operations - Maintenance and repair
- operating principles of RESS and SELV electrical systems relevant to a range of BEVs
- application, purpose and operation of a range of vehicle RESS depowering and reinitialising methods.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEVs that they have depowered and reinitialised e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
- manufacturer specifications and service procedures for the BEVs being depowered and reinitialised
- AS 5732 Electric vehicle operations - Maintenance and repair
- two different BEVs as specified in the performance evidence
- electrical test equipment, including:
    - digital multimeter with Cat III 1000 volt rating
    - insulation tester
    - residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
    - scan tool
- tools, equipment and materials appropriate for depowering and reinitialising BEVs.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH002 Service and maintain battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to service and maintain battery electric vehicles (BEVs). It involves working with automotive electrical components, maintaining rechargeable energy storage systems (RESS), and performing basic tests on electric drive motors. Importance is placed in the unit on applying high voltage (HV) RESS and separated extra low voltage (SELV) electrical safety procedures.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

AURETH001 Depower and reinitialise battery electric vehicles

Competency Field

Electrical

Unit Sector

Technical - Hybrid Vehicle and Battery Electric Vehicle

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to service and maintain BEV	1.1 Job requirements are determined from workplace instructions 1.2 Workplace procedures and manufacturer specifications are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** and AS 5732 Electric vehicle operations - Maintenance and repair 1.4 ***Tools and equipment*** are selected and checked for serviceability
2. Test RESS and drive motor system operation	2.1 Diagnostic equipment is used to retrieve system parameters and information 2.2 RESS and vehicle drive motor system are tested for correct operation according to manufacturer specifications 2.3 Problems associated with performance of RESS or drive motor system are identified and reported according to workplace procedures
3. Deactivate vehicle RESS	3.1 Vehicle is depowered according to manufacturer specifications and workplace procedures 3.2 Vehicle is identified with warning tag or sign to indicate potential hazards 3.3 SELV supply is located and disconnected according to manufacturer specifications 3.4 RESS service plug or manual service disconnect is located and removed to depower vehicle HV RESS according to manufacturer specifications 3.5 Vehicle is stabilised and checked for zero residual voltage according to manufacturer procedures 3.6 RESS service plug or manual service disconnect is secured and retained to prevent refitting by third party
4. Check drive motor and associated components	4.1 Electrical drive motor is checked to confirm condition 4.2 Problems associated with performance of electric drive motor and associated components are identified 4.3 Corrective action required to achieve optimum motor performance is reported according to workplace procedures
5. Check associated electrical subsystems and components	5.1 Condition and operation of associated electrical subsystems and components are checked 5.2 Problems associated with performance of electrical subsystems and components are identified

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	5.3 Required ***corrective action*** is reported according to workplace procedures
6. Reinitialise vehicle RESS	6.1 SELV and RESS service plug or manual service disconnect are reconnected in correct order, and vehicle is reactivated 6.2 Diagnostic test equipment is used to check and recalibrate subsystems affected by depower process as required 6.3 RESS and vehicle subsystems are checked for correct operation 6.4 Post-service testing is carried out to ensure correct and safe operation of BEV, any reported problems are resolved, and no other problems are present
7. Complete work processes	7.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 7.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 7.3 Tools and equipment are checked and stored and any faulty equipment is identified, tagged and isolated according to workplace procedures 7.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and diagrams in testing, servicing and maintenance information from manufacturer specifications, and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• ask questions to clarify workplace instructions • participate in verbal exchanges to report faults, and service and maintenance findings, and make required repair

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Skills	Description
	recommendations.
Numeracy skills to:	• match materials and component part numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret measurements of voltage, current and resistance relating to electrical circuits • measure materials and components to determine compliance with manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • identifying hazards and controlling risks associated with:
	  • working with high voltages on BEV electrical systems
	  • wearing jewellery while working around high electrical currents
	  • determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
	  • using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
	  • identifying and using firefighting equipment as appropriate
	  • using the ‘one hand’ rule
	  • following live system warning tags and signs
	  • depowering vehicle
	  • isolating HV RESS electrical supply

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	• stabilising vehicle electrical system.
Tools and equipment must include:	• those specified in the specific vehicle service maintenance procedures, including: • digital multimeter with Cat III 1000 volt rating • insulation tester • residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements • scan tool.
Corrective action must include:	• tightening connections • balancing state of charge • replacing faulty or damaged cable connections • removing and replacing faulty or damaged components.

Unit Mapping Information

Equivalent to AURETH3002 Service and maintain battery electric vehicles

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH002 Service and maintain battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- safely test, service and maintain two different battery electric vehicles (BEVs).

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to servicing and maintaining BEVs, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages on BEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated high voltage (HV) insulating mat
    - identifying and using firefighting equipment as appropriate
    - using the 'one hand' rule
    - following live system warning tags and signs
    - depowering vehicle
    - isolating HV rechargeable energy storage system (RESS) electrical supply
    - stabilising vehicle electrical system
- requirements of AS 5732 Electric vehicle operations - Maintenance and repair
- key components of BEVs and their functions
- RESS battery construction, including:

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  - battery internal resistance
  - battery types
  - terminal corrosion
  - terminal resistance
- key components of RESS theory, including:
  - cell failure theory
  - charging characteristics
  - open circuit cells
  - reverse polarisation
  - series cell configuration
  - strapping and layout
- battery charger characteristics and operation, including battery cooling system and refrigerant flow through RESS
- battery management system (BMS) theory
- power distribution unit (PDU) operation.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEVs they have serviced and maintained, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE, including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
- manufacturer specifications and service procedures for the BEVs being worked on
- AS 5732 Electric vehicle operations - Maintenance and repair
- two different operational BEVs requiring service and maintenance
- electrical test equipment appropriate to BEVs being serviced, including:

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  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
  - scan tool
- tools, equipment and materials appropriate for testing, servicing and maintaining BEVs.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH003 Diagnose and repair high voltage rechargeable energy storage systems in battery electric vehicle

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the high voltage (HV) rechargeable energy storage systems (RESS) of battery electric vehicles (BEVs). It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on HV RESS.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

AURETH001 Depower and reinitialise battery electric vehicles

Competency Field

Electrical

Unit Sector

Technical - Hybrid Vehicle and Battery Electric Vehicle

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair HV RESS	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is accessed and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** and AS 5732 Electric vehicle operations - Maintenance and repair 1.5 Diagnostic ***tools and equipment*** are selected and checked for serviceability
2. Diagnose RESS	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures and safety requirements 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for required repairs or adjustments are reported according to workplace procedures
3. Repair RESS	3.1 Repair information is accessed and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 RESS service plug or manual service disconnect is located and isolated to depower vehicle HV RESS according to manufacturer specifications 3.5 RESS and components are replaced, repaired or adjusted as required according to manufacturer specifications, workplace procedures, safety and ***environmental requirements***, and without causing damage to components or systems 3.6 RESS service plug or manual service disconnect are reconnected and vehicle is reactivated 3.7 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in diagnostic and repair information in manufacturer specifications, and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret vehicle electrical measurements and readings on digital and analogue gauges • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised tools.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • identifying hazards and controlling risks associated with: • working with high voltages in BEV electrical systems • wearing jewellery while working around high electrical currents • determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when: • using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat • identifying and using firefighting equipment • using the ‘one hand rule’ • following live system warning tags and signs • depowering vehicle • isolating HV RESS electrical supply • stabilising vehicle electrical system.
Tools and equipment must include:	• those specified in the specific vehicle service maintenance procedures, including: • digital multimeter with Cat III 1000 volt rating • insulation tester • residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements • scan tool • oscilloscope.
Environmental requirements must include:	• procedures for trapping, storing and disposing of waste produced during repair procedures.

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Unit Mapping Information

Equivalent to AURETH4003 Test and repair high voltage battery systems in battery electric vehicles

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH003 Diagnose and repair high voltage rechargeable energy storage systems in battery electric vehicle

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair high voltage (HV) rechargeable energy storage systems (RESS) in two different battery electric vehicles (BEVs) to correct performance deficiencies.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing RESS in BEVs, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages on BEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
    - identifying and using firefighting equipment as appropriate
    - using the 'one hand' rule
    - following live system warning tags and signs
    - depowering vehicle
    - isolating HV RESS electrical supply
    - stabilising vehicle electrical system

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- environmental requirements, including procedures for trapping, storing and disposing of waste released during repair procedures
- requirements of AS 5732 Electric vehicle operations - Maintenance and repair
- operating principles of HV RESS in BEVs, including:
  - battery pack construction, including:
    - battery types
    - battery internal resistance
  - battery pack system, including:
    - charging characteristics
    - open circuit cells
    - reverse polarisation
    - series cell configuration
    - strapping and layout
- application, purpose and operation of RESS, including:
  - HV battery charger and direct current (DC) to DC converter
  - battery management system (BMS)
  - power distribution unit (PDU)
- diagnostic testing procedures for HV RESS in BEVs, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - freeze frame data
    - waveforms
  - using diagnostic flow charts
  - electrical system testing, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - testing controller input and output signals and waveforms
    - vehicle dynamic and static testing procedures
    - analysing abnormal noise
    - analysing component failure
  - RESS cooling system testing
- repair procedures for RESS, including:
  - tightening connections
  - replacing faulty or damaged cable connections
  - removing and replacing faulty or damaged components
  - removing and replacing motor controller
- post-repair testing procedures for BEV, including:
  - DTC clearing procedures
  - checking for electrical connector mating

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- performance testing RESS.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the RESS in BEVs that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE, including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
- manufacturer specifications for BEV and RESS
- AS 5732 Electric vehicle operations - Maintenance and repair
- two different BEVs with RESS and associated components accessible for diagnosis and repair or replacement activities
- electrical diagnostic equipment appropriate to the BEV being diagnosed and repaired, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - residual voltage tester, if specified in original equipment manufacturer (OEM) specifications
  - scan tool
  - oscilloscope
- tools, equipment and materials appropriate for repairing BEV RESS and their components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH004 Diagnose and repair traction motor speed control systems in battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the traction motor speed control systems in battery electric vehicles (BEVs). These systems may be referred to as digital motor controllers (DMCs) or motor control units (MCUs). The unit involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) rechargeable energy storage systems (RESS).

It applies to those working in the automotive service and repair industry. Motor speed control systems include circuits in BEVs.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Hybrid Vehicle and Battery Electric Vehicle

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Elements and Performance Criteria

Elements Elements describe the essential outcomes**.**	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair traction motor speed control systems	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** and AS 5732 Electric vehicle operations: Maintenance and repair 1.5 Diagnostic ***tools and equipment*** are selected and checked for serviceability
2. Diagnose motor speed control system	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures and safety requirements 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for necessary repairs or adjustments are reported according to workplace procedures
3. Repair motor speed control system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 RESS service plug or manual service disconnect is located and isolated to depower vehicle HV RESS according to manufacturer specifications 3.5 Motor control systems and components are replaced, repaired or adjusted as required according to manufacturer specifications, workplace procedures, safety and ***environmental requirements***, and without causing damage to components or systems 3.6 RESS service plug or manual service disconnect is reconnected and vehicle is reactivated 3.7 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and faulty electrical

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Elements Elements describe the essential outcomes**.**	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify and locate various sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in diagnostic and repair information in manufacturer specifications and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret vehicle electrical measurements and readings • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised equipment, such as multimeters and scan tools.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • identifying hazards and controlling risks associated with: • working with high voltages in BEV electrical systems • wearing jewellery while working around high electrical currents • determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions: • using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating • identifying and using fire safety equipment as appropriate • using the ‘one hand rule’ • following live system warning tags and signs • depowering the vehicle • isolating the HV RESS electrical supply • stabilising the vehicle electrical system.
Tools and equipment must include:	• those specified in the specific vehicle service maintenance procedures, including: • digital multimeter with Cat III 1000 volt rating • insulation tester • oscilloscope • scan tool • residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements.
Environmental requirements must include:	• procedures for trapping, storing and disposing of waste released from traction motor speed control systems.

Unit Mapping Information

Equivalent to AURETH4004 Diagnose and repair traction motor speed control device in battery electric vehicles

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH004 Diagnose and repair traction motor speed control systems in battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- diagnose and repair traction motor speed control systems and associated components on two different battery electric vehicles (BEVs) to correct performance deficiencies.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing traction motor speed control systems in BEVs, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages in BEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and high voltage (HV) insulating mat with Australian standards rating
    - identifying and using fire safety equipment as appropriate
    - using the 'one hand rule'
    - following live system warning tags and signs
    - depowering the vehicle
    - isolating the HV rechargeable energy storage system (RESS) electrical supply
    - stabilising the vehicle electrical system

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- environmental requirements, including procedures for trapping, storing and disposing of waste released from traction motor speed control systems
- key requirements of AS 5732 Electric vehicle operations: Maintenance and repair
- operating principles of HV BEVs and associated components, including:
  - types of batteries
  - types of traction motors, including alternating current and direct current
  - types of motor controllers
  - battery charging
- application, purpose and operation of traction motor speed control systems and components, including:
  - controller inputs
  - resolvers
  - controller outputs
  - battery interface
- diagnostic testing procedures for battery electric vehicle systems, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - freeze frame data
    - waveforms
  - using diagnostic flow charts
  - testing electrical systems, including:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - controller input and output signals and waveforms
    - vehicle dynamic and static testing procedures
    - abnormal noise analysis
    - component failure analysis
  - testing motor speed controller cooling system
- repair procedures for traction motor speed control systems, including:
  - tightening connections
  - replacing faulty or damaged cable connections
  - removing and replacing faulty or damaged components
  - removing and replacing motor speed controller
- post-repair testing procedures for BEVs, including:
  - DTC clearing procedures
  - checking for electrical connector mating
  - static and dynamic performance tests of traction motors.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEV traction motor speed control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating
- manufacturer specifications for BEV traction motor speed control systems
- AS 5732 Electric vehicle operations: Maintenance and repair
- two different BEVs with traction motor speed control systems accessible for diagnosis and repair or replacement activities
- electrical diagnostic equipment appropriate to the BEV being diagnosed and repaired, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - scan tool
  - oscilloscope
  - residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
- tools, equipment and materials appropriate for repairing high voltage traction motors in BEVs.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH005 Diagnose and repair high voltage traction motors in battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the high voltage (HV) traction motors of battery electric vehicles (BEVs). It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on HV rechargeable energy storage systems (RESS).

It applies to those working in the automotive service and repair industry. HV traction motors include those systems and circuits in BEVs.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Hybrid Vehicle and Battery Electric Vehicle

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair BEV high voltage traction motor	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** and AS 5732 Electric vehicle operations: Maintenance and repair 1.5 Diagnostic ***tools and equipment*** are selected and checked for serviceability
2. Diagnose traction motor	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures and safety requirements 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for necessary repairs or adjustments are reported according to workplace procedures
3. Repair traction motor	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 RESS service plug or manual service disconnect is located and isolated to depower vehicle HV RESS according to manufacturer specifications 3.5 HV traction motors and components are replaced, repaired or adjusted as required according to manufacturer specifications, workplace procedures, safety and ***environmental requirements***, and without causing damage to components or systems 3.6 RESS service plug or manual service disconnect is reconnected and vehicle is reactivated 3.7 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and faulty electrical

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify and locate various sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in diagnostic and repair information in manufacturer specifications and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret vehicle electrical measurements and readings • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised equipment, including multimeters and scan tools.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • identifying hazards and controlling risks associated with: • working with high voltages in BEV electrical systems • wearing jewellery while working around high electrical currents • determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions: • using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating • identifying and using fire safety equipment as appropriate • using the 'one hand rule' • following live system warning tags and signs • depowering the vehicle • isolating the HV RESS electrical supply • stabilising the vehicle electrical system.
Tools and equipment must include:	• those specified in the specific vehicle service maintenance procedures, including: • digital multimeter with Cat III 1000 volt rating • insulation tester • scan tool • oscilloscope • residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements.
Environmental requirements must include:	• procedures for trapping, storing and disposing of waste released from high voltage traction motors.

Unit Mapping Information

Equivalent to AURETH4005 Diagnose and repair high voltage traction motors in battery electric vehicles

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Links

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Assessment Requirements for AURETH005 Diagnose and repair high voltage traction motors in battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- diagnose and repair high voltage (HV) traction motors and associated components on two different battery electric vehicles (BEVs) to correct performance deficiencies.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing HV traction motors in BEVs, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages in BEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and high voltage (HV) insulating mat with Australian standards rating
    - identifying and using fire safety equipment as appropriate
    - using the 'one hand rule'
    - following live system warning tags and signs
    - depowering the vehicle
    - isolating the HV rechargeable energy storage system (RESS) electrical supply
    - stabilising the vehicle electrical system

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- environmental requirements, including procedures for trapping, storing and disposing of waste released from high voltage traction motors
- key requirements of AS 5732 Electric vehicle operations: Maintenance and repair
- operating principles of HV BEVs and associated components, including:
  - motor generators
  - types of batteries
  - battery charging
- application, purpose and operation of HV traction motors and components, including:
  - direct current (DC) motor generators
  - alternating current (AC) motor generators
- diagnostic testing procedures for battery electric vehicle systems, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - freeze frame data
    - waveforms
  - using diagnostic flow charts
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - determining damage to traction motor windings
    - checking insulation resistance of traction motor windings
    - checking routing and damage to HV cabling
    - conducting vehicle dynamic and static tests
    - analysing abnormal noise
    - analysing component failure
- repair procedures for traction motor speed control systems, including:
  - tightening connections
  - replacing faulty or damaged cable connections
  - removing and replacing faulty or damaged components
  - removing and replacing the traction motor
- post-repair testing procedures for BEVs, including:
  - DTC clearing procedures
  - checking for electrical connector mating
  - static and dynamic performance tests of traction motors.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEV HV traction motors that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and high voltage (HV) insulating mat with Australian standards rating
- manufacturer specifications for BEV HV traction motor systems
- AS 5732 Electric vehicle operations: Maintenance and repair
- two different BEVs with HV traction motor systems accessible for diagnosis and repair or replacement activities
- electrical diagnostic equipment appropriate to the BEV being diagnosed and repaired, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - scan tool
  - oscilloscope
  - residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
- tools, equipment and materials appropriate for repairing HV traction motors in BEVs.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH006 Diagnose and repair auxiliary motors and associated components in battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the auxiliary motors of battery electric vehicles (BEVs), and in their associated components and control systems. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) rechargeable energy storage systems (RESS).

It applies to those working in the automotive service and repair industry. BEV systems that may use auxiliary motors include power steering, braking and passenger comfort systems. Auxiliary motors and associated components include circuits in BEVs.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

AURETH001 Depower and reinitialise battery electric vehicles

Competency Field

Electrical

Unit Sector

Technical - Hybrid Vehicle and Battery Electric Vehicle

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
1. Prepare to diagnose and repair BEV auxiliary motor	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** and AS 5732 Electric vehicle operations: Maintenance and repair 1.5 Diagnostic ***tools and equipment*** are selected and checked for serviceability
2. Diagnose auxiliary motor	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures and safety requirements 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for necessary repairs or adjustments are reported according to workplace procedures
3. Repair auxiliary motor	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 RESS service plug or manual service disconnect is located and isolated to depower vehicle HV RESS according to manufacturer specifications 3.5 Auxiliary motor and associated components are replaced, repaired or adjusted as required according to manufacturer specifications, workplace procedures, safety and ***environmental requirements***, and without causing damage to components or systems 3.6 RESS service plug or manual service disconnect is reconnected and vehicle is reactivated 3.7 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
	4.3 Tools and equipment are checked and stored and faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify and locate various sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in diagnostic and repair information in manufacturer specifications and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret vehicle electrical measurements and readings • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised equipment, including multimeters and scan tools.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • identifying hazards and controlling risks associated with: • working with high voltages in BEV electrical systems • wearing jewellery while working around high electrical currents • determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions: • using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating • identifying and using fire safety equipment as appropriate • using the ‘one hand rule’ • following live system warning tags and signs • depowering the vehicle • isolating the HV RESS electrical supply • stabilising the vehicle electrical system.
Tools and equipment must include:	• those specified in the specific vehicle service maintenance procedures, including: • digital multimeter with Cat III 1000 volt rating • insulation tester • oscilloscope • scan tool • oscilloscope • residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements.
Environmental requirements must include:	• procedures for trapping, storing and disposing of waste released from auxiliary motors and components.

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Unit Mapping Information

Equivalent to AURETH4006 Diagnose and repair auxiliary motors and associated components in battery electric vehicles

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH006 Diagnose and repair auxiliary motors and associated components in battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- diagnose and repair auxiliary motors, associated components and control systems in two different battery electric vehicles (BEVs) to correct performance deficiencies.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing auxiliary motors and associated components, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages in BEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and high voltage (HV) insulating mat with Australian standards rating
    - identifying and using fire safety equipment as appropriate
    - using the 'one hand rule'
    - following live system warning tags and signs
    - depowering the vehicle
    - isolating the HV rechargeable energy storage system (RESS) electrical supply

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    - stabilising the vehicle electrical system
- environmental requirements, including procedures for trapping, storing and disposing of waste released from auxiliary motors and components
- key requirements of AS 5732 Electric vehicle operations: Maintenance and repair
- operating principles of BEV auxiliary motors and associated components, including:
    - direct current (DC) motors
    - alternating current (AC) motors
- application, purpose and operation of auxiliary motor systems and components, including:
    - electric-assisted power steering
    - electric-assisted braking
    - electric-assisted passenger comfort systems, including heating, cooling and air conditioning (HVAC) systems
- diagnostic testing procedures for auxiliary motor systems and associated components, including:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - freeze frame data
        - waveforms
    - using diagnostic flow charts
    - testing electrical systems, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - testing motor controller input and output signals and waveforms
        - testing auxiliary motor operation
        - analysing abnormal noise
        - analysing component failure
- repair procedures for auxiliary motor and associated systems, including:
    - tightening connections
    - replacing faulty or damaged cable connections
    - removing and replacing faulty or damaged components
    - removing and replacing the auxiliary motor and controllers
- post-repair testing procedures for BEVs, including:
    - DTC clearing procedures
    - checking for electrical connector mating
    - performance tests of auxiliary motor system.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEV auxiliary motors and associated components that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and high voltage (HV) insulating mat with Australian standards rating
- manufacturer specifications for BEV auxiliary motors and subsystems
- AS 5732 Electric vehicle operations: Maintenance and repair
- two different BEVs with auxiliary motors and associated components accessible for diagnosis and repair or replacement activities
- electrical diagnostic equipment appropriate to the BEV being diagnosed and repaired, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - scan tool
  - oscilloscope
  - residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
- tools, equipment and materials appropriate for repairing BEV auxiliary motors and their components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH007 Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the system instrumentation and safety interlocks of battery electric vehicles (BEVs). It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) rechargeable energy storage systems (RESS).

It applies to those working in the automotive service and repair industry. System instrumentation and safety interlocks include circuits in BEVs.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

AURETH001 Depower and reinitialise battery electric vehicles

Competency Field

Electrical

Unit Sector

Technical - Hybrid Vehicle and Battery Electric Vehicle

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
1. Prepare to diagnose and repair BEV system instrumentation and safety interlocks	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** and AS 5732 Electric vehicle operations: Maintenance and repair 1.5 Diagnostic ***tools and equipment*** are selected and checked for serviceability
2. Diagnose system instrumentation and safety interlocks	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures and safety requirements 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for necessary repairs or adjustments are reported according to workplace procedures
3. Repair system instrumentation and safety interlocks	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 RESS service plug or manual service disconnect is located and isolated to depower vehicle HV RESS according to manufacturer specifications 3.5 System instrumentation and safety interlocks are replaced, repaired or adjusted as required according to manufacturer specifications, workplace procedures, safety and ***environmental requirements***, and without causing damage to components or systems 3.6 RESS service plug or manual service disconnect is reconnected and vehicle is reactivated 3.7 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
	4.3 Tools and equipment are checked and stored and faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify and locate various sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in diagnostic and repair information in manufacturer specifications and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret vehicle electrical measurements and readings • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised equipment, including multimeters and scan tools.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • identifying hazards and controlling risks associated with:
	  • working with high voltages in BEV electrical systems
	  • wearing jewellery while working around high electrical currents
	  • determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions:
	  • using personal protective equipment (PPE), such as electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating
	  • identifying and using fire safety equipment as appropriate
	  • using the ‘one hand rule’
	  • following live system warning tags and signs
	  • depowering the vehicle
	  • isolating the HV RESS electrical supply
	  • stabilising the vehicle electrical system.

Tools and equipment must include:	• those specified in the specific vehicle service maintenance procedures, including:
	  • digital multimeter with Cat III 1000 volt rating
	  • insulation tester
	  • scan tool
	  • oscilloscope
	  • residual voltage tester, if specified in OEM requirements.

Environmental requirements must include:	• procedures for trapping, storing and disposing of waste released during repair work.

Unit Mapping Information

Equivalent to AURETH4007 Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH007 Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- diagnose and repair system instrumentation and safety interlocks and their associated components on two different battery electric vehicles (BEVs) to correct performance deficiencies.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing instrumentation and safety interlocks in BEVs, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages in BEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and high voltage (HV) insulating mat with Australian Standards rating
    - identifying and using fire safety equipment as appropriate
    - using the 'one hand rule'
    - following live system warning tags and signs
    - depowering the vehicle

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    - isolating the HV rechargeable energy storage system (RESS) electrical supply
    - stabilising the vehicle electrical system
- environmental requirements, including procedures for trapping, storing and disposing of waste produced released during repair work
- key requirements of AS 5732 Electric vehicle operations: Maintenance and repair
- operating principles of BEV instrumentation and safety interlocks and associated components, including reasons for safety interlocks in BEVs
- application, purpose and operation of BEV instrumentation and safety interlocks, including:
    - battery charger, including charge cable sensor
    - controller signals
    - gear selector inhibitor switch
    - ignition or power key
    - inertia or impact sensor
    - isolation componentry, including HV contactor
    - motor over temperature control
    - under voltage protection
- diagnostic testing procedures for BEV instrumentation and safety interlocks, including:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - freeze frame data
        - waveforms
    - using diagnostic flow charts
    - testing electrical systems, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - determining battery state of charge
        - operational tests of safety interlocks
        - testing instrumentation data communication systems using scan tool and oscilloscope
        - undertaking vehicle dynamic and static tests
- repair procedures for instrumentation and safety interlocks, including:
    - tightening connections
    - replacing faulty or damaged cable connections
    - removing and replacing faulty or damaged components
    - removing and replacing instrumentation
- post-repair testing procedures for BEVs, including:
    - DTC clearing procedures
    - checking for electrical connector mating.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEV system instrumentation and safety interlocks that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating
- manufacturer specifications for BEV system instrumentation and safety interlocks
- AS 5732 Electric vehicle operations: Maintenance and repair
- two different BEVs with system instrumentation and safety interlocks accessible for diagnosis and repair or replacement activities
- electrical diagnostic equipment appropriate to the BEV being diagnosed and repaired, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - scan tool
  - oscilloscope
  - residual voltage tester, if specified in OEM requirements
- tools, equipment and materials appropriate for repairing system instrumentation and safety interlocks in BEVs.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH008 Diagnose and repair HVAC and rechargeable energy storage cooling systems in battery electric vehicle

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the heating, ventilation and air conditioning (HVAC) system and cooling system of the rechargeable energy storage system (RESS) of battery electric vehicles (BEVs). The unit involves removing and replacing refrigerant, as well as performance testing the HVAC and RESS cooling system. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) RESS.

It applies to those working in the automotive service and repair industry. HVAC and RESS cooling systems include circuits in BEVs.

Licensing requirements apply to this unit. Users are advised to check with the relevant regulatory authority.

Pre-requisite Unit

AURETH001 Depower and reinitialise battery electric vehicles

Competency Field

Electrical

Unit Sector

Technical - Hybrid Vehicle and Battery Electric Vehicle

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair HVAC and RESS cooling system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** and AS 5732 Electric vehicle operations: Maintenance and repair 1.5 Diagnostic ***tools and equipment*** are selected and checked for serviceability
2. Diagnose HVAC and RESS cooling system	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures and safety requirements 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for necessary repairs or adjustments are reported according to workplace procedures
3. Repair HVAC and RESS cooling system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 RESS service plug or manual service disconnect is located and isolated to depower vehicle HV RESS according to manufacturer specifications 3.5 HVAC and RESS cooling system components are replaced, repaired or adjusted as required according to manufacturer specifications, workplace procedures, safety and ***environmental requirements,*** and without causing damage to components or systems 3.6 RESS service plug or manual service disconnect is reconnected and vehicle is reactivated 3.7 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 ***Australian Refrigeration Council accredited service decal sticker (ARCtick)*** and other required workplace documentation are completed and processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify and locate various sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in diagnostic and repair information in manufacturer specifications and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret vehicle electrical measurements and readings • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within

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Skills	Description
skills to:	workplace timeframes.
Technology skills to:	• use specialised equipment, including multimeters and scan tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • identifying hazards and controlling risks associated with: • working with high voltages in BEV electrical systems • wearing jewellery whilst working around high electrical currents • working with refrigerants at boiling point given risk of frostbite • working with system lubricants, including carcinogenic oils • handling flammable refrigerants • determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions: • using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating • identifying and using fire safety equipment as appropriate • using the ‘one hand rule’ • following live system warning tags and signs • depowering the vehicle • isolating the HV RESS electrical supply • stabilising the vehicle electrical system.

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Tools and equipment must include:	• those specified in the specific vehicle service maintenance procedures, including:
	  • digital multimeter with Cat III 1000 volt rating
	  • insulation tester
	  • scan tool
	  • residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
	  • temperature and pressure measuring equipment, including:
	  • manifold and gauge set
	  • contact thermometer
	  • infrared thermometer (pyrometer)
	  • electronic temperature probe
	  • psychrometer (humidity detector)
	  • digital vacuum gauge (vacrometer)
	  • refrigerant leak detecting equipment, including electronic leak detector
	  • refrigerant recovery equipment, including:
	  • recovery unit
	  • vacuum pump
	  • electronic scales
	  • miscellaneous equipment, including:
	  • valve core removing or replacement tool
	  • oil injector.

Environmental requirements must include:	• procedures for:
	  • trapping, storing and disposing of waste released from HVAC and RESS cooling systems
	  • preventing the escape of refrigerant to the atmosphere.

Australian Refrigeration Council accredited service decal sticker (ARCtick) information must include:	• name of the service organisation • name of technician • Refrigerant Handling Licence Number • vehicle registration number • service date • refrigerant type • lubricant type.

Unit Mapping Information

Equivalent to AURETH4008 Diagnose and repair high voltage cabin heating and cooling systems in battery electric vehicles

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH008 Diagnose and repair HVAC and rechargeable energy storage cooling systems in battery electric vehicle

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- diagnose and repair heating, ventilation and air conditioning (HVAC) system and rechargeable energy storage system (RESS) cooling system components on two different battery electric vehicles (BEVs), in which the work must involve:
  - repairing or replacing one HVAC system component to correct performance deficiencies
  - repairing or replacing one RESS cooling system component to correct performance deficiencies.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing HVAC and RESS cooling systems, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages in BEV electrical systems
    - wearing jewellery while working around high electrical currents
    - working with refrigerants at boiling point given risk of frostbite
    - working with system lubricants, including carcinogenic oils
    - handling flammable refrigerants
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions:

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    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and high voltage (HV) insulating mat with Australian standards rating
    - identifying and using fire safety equipment as appropriate
    - using the ‘one hand rule’
    - following live system warning tags and signs
    - depowering the vehicle
    - isolating the HV RESS electrical supply
    - stabilising the vehicle electrical system
- environmental requirements, including procedures for:
    - trapping, storing and disposing of waste released from HVAC and RESS cooling systems
    - preventing the escape of refrigerant to the atmosphere
- key requirements of AS 5732 Electric vehicle operations: Maintenance and repair
- operating principles of HVAC systems and RESS cooling systems and associated components, including:
    - types of HVAC systems, including engine operated and electric motor operated systems
    - types of RESS and RESS charging
    - reasons for cooling the RESS
- application, purpose and operation of HVAC systems and RESS cooling systems and components, including:
    - alternating current (AC) electric motor compressors
    - HVAC control units
    - HVAC control unit inputs and outputs
    - HVAC ejector cycle systems
    - RESS cooling systems, including air cooling, liquid cooling and HVAC cooled systems
- diagnostic testing procedures for HVAC and RESS cooling systems, including:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - freeze frame data
        - waveforms
    - using diagnostic flow charts
    - testing electrical systems, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - determining damage to compressor motor windings
        - checking insulation resistance of compressor motor windings
        - checking routing and damage to HV cabling

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    - HVAC dynamic and static testing
    - analysing abnormal noise
    - analysing component failure
- repair procedures for HVAC systems and RESS cooling systems, including:
    - tightening connections
    - replacing faulty or damaged cable connections
    - removing and replacing faulty or damaged components
- post-repair testing procedures for HVAC and RESS cooling systems, including:
    - DTC clearing procedures
    - checking for electrical connector mating
    - static and dynamic performance tests of HVAC systems and RESS cooling systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEV HVAC and RESS cooling systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- ARC accredited service decal sticker (ARCtick)
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating
- manufacturer specifications for BEV HVAC and RESS cooling systems
- AS 5732 Electric vehicle operations: Maintenance and repair
- two different BEVs with HVAC and RESS cooling system components accessible for diagnosis and repair or replacement activities
- electrical diagnostic equipment appropriate to the BEV HVAC and RESS cooling being diagnosed and repaired as specified under tools and equipment in the range of conditions

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- tools, equipment and materials appropriate for repairing HVAC and RESS cooling systems in BEVs.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH009 Diagnose and repair DC to DC converters in battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in high voltage (HV) direct current (DC) to low voltage (LV) DC converters in battery electric vehicles (BEVs). It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on HV rechargeable energy storage systems (RESS).

It applies to those working in the automotive service and repair industry. HV DC to LV DC converters include circuits in BEVs.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

AURETH001 Depower and reinitialise battery electric vehicles

AURETR025 Test, charge and replace batteries and jump start vehicles

Competency Field

Electrical

Unit Sector

Technical - Hybrid Vehicle and Battery Electric Vehicle

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair DC to DC converter	1.2 Job requirements are determined from workplace instructions 1.3 Diagnostic information is sourced and interpreted 1.4 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.5 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** and AS 5732 Electric vehicle operations: Maintenance and repair 1.6 Diagnostic ***tools and equipment*** are selected and checked for serviceability
2. Diagnose DC to DC converter	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures and safety requirements 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for necessary repairs or adjustments are reported according to workplace procedures
3. Repair DC to DC converter	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 RESS service plug or manual service disconnect is located and isolated to depower vehicle HV RESS according to manufacturer specifications 3.5 DC to DC converters are replaced, repaired or adjusted as required according to manufacturer specifications, workplace procedures, safety and ***environmental requirements***, and without causing damage to components or systems 3.6 RESS service plug or manual service disconnect is reconnected and vehicle is reactivated 3.7 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and faulty electric equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify and locate various sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in diagnostic and repair information in manufacturer specifications and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret vehicle electrical measurements and readings • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised equipment, including multimeters and scan tools.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • identifying hazards and controlling risks associated with:
	  • working with high voltages in BEV electrical systems
	  • wearing jewellery while working around high electrical currents
	  • determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions:
	  • using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating
	  • identifying and using fire safety equipment as appropriate
	  • using the ‘one hand rule’
	  • following live system warning tags and signs
	  • depowering the vehicle
	  • isolating the HV RESS electrical supply
	  • stabilising the vehicle electrical system.

Tools and equipment must include:	• those specified in the specific vehicle service maintenance procedures, including:
	  • digital multimeter with Cat III 1000 volt rating
	  • insulation tester
	  • scan tool
	  • oscilloscope
	  • residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements.

Environmental requirements must include:	• procedures for trapping, storing and disposing of waste produced during repair work.

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Unit Mapping Information

Equivalent to AURETH4009 Diagnose and repair DC to DC converters in battery electric vehicles

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH009 Diagnose and repair DC to DC converters in battery electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- diagnose and repair the DC to DC converter and its system components on two different battery electric vehicles (BEVs) to correct performance deficiencies.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing DC to DC converters in BEVs, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages in BEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and high voltage (HV) insulating mat with Australian standards rating
    - identifying and using fire safety equipment as appropriate
    - using the 'one hand rule'
    - following live system warning tags and signs
    - depowering the vehicle
    - isolating the HV rechargeable energy storage system (RESS) electrical supply
    - stabilising the vehicle electrical system

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- environmental requirements, including procedures for trapping, storing and disposing of waste produced during repair work
- key requirements of AS 5732 Electric vehicle operations: Maintenance and repair
- operating principles of DC to DC converters and associated components, including:
  - step-down converters
  - step-up converters
  - continuous current mode
  - discontinuous current mode
  - signal noise, including radio frequency (RF) noise, input noise and output noise
- application, purpose and operation of DC to DC converters and components, including:
  - linear converters
  - switched mode conversion
  - magnetic converters
  - capacitive converters
- diagnostic testing procedures for DC to DC converters, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - freeze frame data
    - waveforms
  - using diagnostic flow charts
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - checking voltage input and output of DC to DC converters
    - checking routing and damage to cabling
- repair procedures for traction motor speed control systems, including:
  - tightening connections
  - replacing faulty or damaged cable connections
  - removing and replacing faulty or damaged components
- post-repair testing procedures for BEVs, including:
  - DTC clearing procedures
  - checking for electrical connector mating.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the BEV DC to DC converters that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE and safety equipment, including electrical safety gloves with 1000 volt rating and HV insulating mat with Australian standards rating
- manufacturer specifications for BEV DC to DC converters
- AS 5732 Electric vehicle operations: Maintenance and repair
- two different BEVs with DC to DC converters accessible for diagnostic and repair or replacement activities
- electrical diagnostic equipment appropriate to the BEV being diagnosed and repaired, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - scan tool
  - oscilloscope
  - residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
- tools, equipment and materials appropriate for repairing DC to DC converters in BEVs.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH010 Diagnose and repair high voltage rechargeable energy storage systems in hybrid electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the high voltage (HV) rechargeable energy storage system (RESS) of hybrid electric vehicles (HEVs) and plug-in hybrid electric vehicles (PHEVs). It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and repair, performing post-repair testing, and completing workplace processes and documentation. Importance is placed in the unit on applying electrical safety procedures when working on HV RESS.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

AURETR025 Test, charge and replace batteries and jump-start vehicles

Competency Field

Electrical

Unit Sector

Technical - Hybrid Vehicle and Battery Electric Vehicle

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair HV RESS	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is accessed and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** and AS 5732 Electric vehicle operations - Maintenance and repair 1.5 Diagnostic ***tools and equipment*** are selected and checked for serviceability
2. Diagnose RESS	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures and safety requirements 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for required repairs or adjustments are reported according to workplace procedures
3. Repair RESS	3.1 Repair information is accessed and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 RESS service plug or manual service disconnect is located and isolated to depower vehicle HV RESS according to manufacturer specifications 3.5 RESS and components are replaced, repaired or adjusted as required according to manufacturer specifications, workplace procedures, safety and ***environmental requirements***, and without causing damage to components or systems 3.6 RESS service plug or manual service disconnect are reconnected and vehicle is reactivated 3.7 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in diagnostic and repair information in manufacturer specifications, and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret vehicle electrical measurements and readings on digital and analogue gauges • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised tools.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • identifying hazards and controlling risks associated with:
	  • working with high voltages in HEV and PHEV electrical systems
	  • wearing jewellery while working around high electrical currents
	  • determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
	  • using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
	  • identifying and using firefighting equipment as appropriate
	  • using the ‘one hand’ rule
	  • following live system warning tags and signs
	  • depowering vehicle
	  • isolating HV RESS electrical supply
	  • stabilising vehicle electrical system.

Tools and equipment must include:	• those specified in the specific vehicle service maintenance procedures, including:
	  • digital multimeter with Cat III 1000 volt rating
	  • insulation tester
	  • residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
	  • scan tool
	  • oscilloscope.

Environmental requirements must include:	• procedures for trapping, storing and disposing of waste produced during repair procedures.

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Unit Mapping Information

Equivalent to AURETH4010 Test high voltage batteries in hybrid electric vehicles

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH010 Diagnose and repair high voltage rechargeable energy storage systems in hybrid electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair high voltage (HV) rechargeable energy storage systems (RESS) in two different hybrid electric vehicles (HEVs) or plug-in hybrid electric vehicles (PHEVs) to correct performance deficiencies.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing RESS in HEVs and PHEVs, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages on HEV and PHEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
    - identifying and using firefighting equipment as appropriate
    - using the 'one hand' rule
    - following live system warning tags and signs
    - depowering vehicle
    - isolating HV RESS electrical supply
    - stabilising vehicle electrical system

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- environmental requirements, including procedures for trapping, storing and disposing of waste released during repair procedures
- requirements of AS 5732 Electric vehicle operations - Maintenance and repair
- operating principles of HV RESS in HEVs and PHEVs, including:
  - battery pack construction, including:
    - battery types
    - battery internal resistance
  - battery pack system, including:
    - charging characteristics
    - open circuit cells
    - reverse polarisation
    - series cell configuration
    - strapping and layout
- application, purpose and operation of RESS, including:
  - HV battery charger and direct current (DC) to DC converter
  - battery management system (BMS)
  - power distribution unit (PDU)
- diagnostic testing procedures for HV RESS in HEVs and PHEVs, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - freeze frame data
    - waveforms
  - using diagnostic flow charts
  - electrical system testing, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - testing controller input and output signals and waveforms
    - vehicle dynamic and static testing procedures
    - analysing abnormal noise
    - analysing component failure
  - RESS cooling system testing
- repair procedures for RESS, including:
  - tightening connections
  - replacing faulty or damaged cable connections
  - removing and replacing faulty or damaged components
  - removing and replacing motor controller
- post-repair testing procedures for BEV, including:
  - DTC clearing procedures
  - checking for electrical connector mating

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- performance testing RESS.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the RESS in HEVs and PHEVs that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE, including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
- manufacturer specifications for HEV or PHEV RESS
- AS 5732 Electric vehicle operations - Maintenance and repair
- two different HEVs or PHEVs RESS and associated components accessible for diagnosis and repair or replacement activities
- electrical diagnostic equipment appropriate to the HEVs or PHEVs being diagnosed and repaired, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - residual voltage tester, if specified in original equipment manufacturer (OEM) specifications
  - scan tool
  - oscilloscope
- tools, equipment and materials appropriate for repairing HEV or PHEV RESS and their components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH011 Depower and reinitialise hybrid electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to depower and reinitialise hybrid electric vehicles (HEVs) and plug-in hybrid electric vehicles (PHEVs). It involves ensuring that the vehicle high voltage (HV) rechargeable energy storage system (RESS) is isolated before commencing any service or repair work. It also involves calibrating vehicle systems that may need resetting once the energy storage system is reinitialised. Importance is placed in the unit on applying RESS and separated extra low voltage (SELV) electrical safety procedures.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Hybrid Vehicle and Battery Electric Vehicle

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to depower and reinitialise HEV and PHEV	1.1 Job requirements are determined from workplace instructions 1.2 Workplace procedures and manufacturer specifications are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** and AS 5732 Electric vehicle operations - Maintenance and repair 1.4 ***Tools and equipment*** are selected and checked for serviceability 1.5 Vehicle is identified with warning tags or sign to indicate potential hazards
2. Deactivate vehicle RESS	2.1 SELV supply is located and disconnected according to manufacturer specifications 2.2 RESS service plug or manual service disconnect is located and removed to depower vehicle HV RESS according to manufacturer specifications 2.3 Vehicle is stabilised and checked for zero residual voltage according to manufacturer procedures 2.4 RESS service plug or manual service disconnect is secured and retained to prevent refitting by third party
3. Reinitialise vehicle RESS	3.1 SELV and RESS service plug or manual service disconnect are reconnected in the correct order and vehicle is reactivated 3.2 Diagnostic and testing equipment is used to check and recalibrate subsystems affected by depower process as required 3.3 RESS and vehicle subsystems are checked for correct operation 3.4 Post-reactivation faults are reported according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and diagrams in depowering and reinitialising information in manufacturer specifications, and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• listen to workplace instructions and ask questions to clarify job requirements • participate in verbal exchanges when depowering and reinitialising HEVs and PHEVs.
Numeracy skills to:	• match electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret vehicle electrical measurements and readings on digital and analogue gauges • interpret measurements of residual voltage and high voltages relating to HEVs and PHEVs.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify faults in reinitialising process that need to be reported.
Technology skills to:	• use specialised tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must	• work health and safety (WHS) and occupational health and safety

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include:	(OHS) requirements, including procedures for:
	• identifying hazards and controlling risks associated with:
	  • working with high voltages on HEV and PHEV electrical systems
	  • wearing jewellery while working around high electrical currents
	• determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
	  • using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
	  • identifying and using firefighting equipment as appropriate
	  • using the 'one hand' rule
	  • following live system warning tags and signs
	  • depowering vehicle
	  • isolating HV RESS electrical supply
	  • stabilising vehicle electrical system.

Tools and equipment must include:	• those specified in the specific vehicle service maintenance procedures, including:
	  • digital multimeter with Cat III 1000 volt rating
	  • insulation tester
	  • residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
	  • scan tool.

Unit Mapping Information

Equivalent to AURETH4011 Deactivate and reinitialise power supply in hybrid electric vehicles

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH011 Depower and reinitialise hybrid electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- safely depower the rechargeable energy storage system (RESS) and separated extra low voltage (SELV) of two different hybrid electric vehicles (HEVs) or plug-in hybrid electric vehicles (PHEVs), and stabilise the vehicles ensuring that no residual high voltage (HV) is measured
- safely reinitialise each HEV's or PHEV's RESS and SELV system and confirm correct vehicle operation.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to depowering and reinitialising the RESS in HEVs or PHEVs, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages on HEV and PHEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
    - identifying and using firefighting equipment as appropriate
    - using the 'one hand' rule
    - following live system warning tags and signs

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    - depowering vehicle
    - isolating HV RESS electrical supply
    - stabilising vehicle electrical system
- requirements of AS 5732 Electric vehicle operations - Maintenance and repair
- operating principles of RESS and SELV electrical systems relevant to a range of HEVs and PHEVs
- application, purpose and operation of a range of vehicle RESS depowering and repowering methods.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the HEVs or PHEVs that they have depowered and reinitialised, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE, including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
- manufacturer specifications and service procedures for the HEVs or PHEVs being depowered and reinitialised
- AS 5732 Electric vehicle operations - Maintenance and repair
- two different operational HEVs or PHEVs as specified in the performance evidence
- electrical test equipment, including:
    - digital multimeter with Cat III 1000 volt rating
    - insulation tester
    - residual voltage tester, if specified in original equipment manufacturer (OEM) specifications
    - scan tool

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- tools, equipment and materials appropriate for depowering and reinitialising RESS in HEVs and PHEVs.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH012 Service and maintain electrical components in hybrid electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to service and maintain electrical components in hybrid electric vehicles (HEVs) and plug-in hybrid electric vehicles (PHEVs). It involves working with the automotive electrical components and electrical systems that support the control and operation of the vehicle. Importance is placed in the unit on applying high voltage (HV) rechargeable energy storage system (RESS) electrical safety procedures.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

AURETH011 Depower and reinitialise hybrid electric vehicles

Competency Field

Electrical

Unit Sector

Technical - Hybrid Vehicle and Battery Electric Vehicle

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to service and maintain electrical components in HEVs and PHEVs	1.1 Job requirements are determined from workplace instructions 1.2 Workplace procedures and manufacturer specifications are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** and AS 5732 Electric vehicle operations - Maintenance and repair 1.4 ***Tools and equipment*** are selected and checked for serviceability
2. Test electrical systems and components	2.1 Diagnostic equipment is used to retrieve system parameters and information 2.2 HEV or PHEV systems and components are tested for electrical efficiency according to manufacturer specifications 2.3 Electrical circuits are tested according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 2.4 Faults in HEV or PHEV electrical systems and components are identified
3. Service and maintain electrical systems and components	3.1 Problems associated with performance of electrical systems and components are identified, and appropriate ***corrective action*** is taken 3.2 Faults within electrical systems and components are identified and required corrective action is taken or reported according to workplace procedures 3.3 Components are repaired, replaced and adjusted according to manufacturer and component specifications and workplace procedures 3.4 Post-service testing is carried out to ensure correct and safe operation of HEV and PHEV, any reported problems are resolved, and no other problems are present
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or equipment is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and diagrams in testing, servicing and maintenance information in manufacturer specifications, and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when servicing and maintaining electrical components in HEVs or PHEVs.
Oral communication skills to:	• ask questions to clarify workplace instructions • participate in verbal exchanges to report faults, and service and maintenance findings, and make required repair recommendations.
Numeracy skills to:	• match materials and component part numbers to workplace instructions, component part lists, and manufacturer specifications • interpret measurements of voltage, current and resistance relating to electrical circuits • measure components to determine compliance with manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify hazards and risks and take action to minimise them.
Technology skills to:	• use specialised tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • identifying hazards and controlling risks associated with:
	  • working with high voltages on HEV and PHEV electrical systems
	  • wearing jewellery while working around high electrical currents
	  • determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
	  • using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
	  • identifying and using firefighting equipment as appropriate
	  • using the 'one hand' rule
	  • following live system warning tags and signs
	  • depowering vehicle
	  • isolating HV RESS electrical supply
	  • stabilising vehicle electrical system.

Tools and equipment must include:	• those specified in the specific vehicle service maintenance procedures, including:
	  • digital multimeter with Cat III 1000 volt rating
	  • insulation tester
	  • residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
	  • scan tool.

Corrective action must include:	• tightening connections • balancing state of charge • replacing faulty or damaged cable connections • removing and replacing faulty or damaged components.

Unit Mapping Information

Equivalent to AURETH4012 Service and maintain electrical components in hybrid electric vehicles

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH012 Service and maintain electrical components in hybrid electric vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- safely test, service and maintain two different hybrid electric vehicles (HEVs) or plug-in hybrid electric vehicles (PHEVs).

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to servicing and maintaining HEV and PHEV electrical components, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages on HEV and PHEV electrical systems
    - wearing jewellery while working around high electrical currents
  - determining appropriate procedures for minimising risk associated with hazards, including applying electrical safety precautions when:
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated high voltage (HV) insulating mat
    - identifying and using firefighting equipment as appropriate
    - using the 'one hand' rule
    - following live system warning tags and signs
    - depowering vehicle
    - isolating HV rechargeable energy storage system (RESS) electrical supply
    - stabilising vehicle electrical system
- requirements of AS 5732 Electric vehicle operations - Maintenance and repair

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- key electrical components of HEVs and PHEVs and their functions
- RESS battery construction, including:
  - battery internal resistance
  - battery types
  - terminal corrosion
  - terminal resistance
- key components of RESS theory, including:
  - cell failure theory
  - charging characteristics
  - open circuit cells
  - reverse polarisation
  - series cell configuration
  - strapping and layout
- different types of HEVs and PHEVs, including:
  - series, parallel and series parallel
  - strong, mid or weak hybrid systems
- operating principles of RESS and battery management system (BMS)
- key characteristics of HV battery charger and direct current (DC) to DC converter
- operating principles of power distribution unit (PDU).

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electrical systems and components they have serviced and maintained in HEVs or PHEVs, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- PPE, including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
- manufacturer specifications and service procedures for the HEVs or PHEVs being worked on
- AS 5732 Electric vehicle operations - Maintenance and repair
- two different operational HEVs or PHEVs requiring service and maintenance
- electrical test equipment appropriate to the HEVs and PHEVs being serviced, including:
  - digital multimeter with Cat III 1000 volt rating
  - insulation tester
  - residual voltage tester, if specified in original equipment manufacturer (OEM) test requirements
  - scan tool
- tools, equipment and materials appropriate for servicing and maintaining HEVs and PHEVs.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETH013 Analyse and evaluate electrical and electronic faults in HEV and BEV management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate electrical and electronic faults in the embedded network management systems of hybrid, plug-in hybrid and battery electric vehicles (HEV, PHEV and BEV) in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions. Importance is placed in the unit on applying electrical safety procedures when working on high voltage (HV) rechargeable energy storage systems (RESS).

It applies to those working in the automotive service and repair industry on HEV, PHEV or BEV embedded network management systems.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Hybrid Vehicle and Battery Electric Vehicle

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for HEV, PHEV or BEV management system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified, appropriate precautions are taken, and risks are managed according to workplace procedures, ***safety requirements***, and requirements of Australian Design Rules (ADRs) and AS 5732 Electric vehicle operations: Maintenance and repair
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected, checked and prepared for use 2.5 HEV, PHEV or BEV management system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, requirements of ADRs and AS 5732

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to HEV, PHEV and BEV management systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised HEV, PHEV and BEV management system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • identifying hazards and controlling risks associated with:
	  • working with high voltages on vehicle electrical systems
	  • working with hazardous materials and toxic substances
	  • wearing jewellery while working around high electrical currents
	  • minimising risk, including:
	  • analysing task to define risk
	  • applying electrical safety precautions, including 'one hand' rule, live system warning tags and signs, depowering the vehicle, isolating the HV RESS electrical supply, and stabilising the vehicle HV electrical systems
	  • using personal protective equipment, including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
	  • identifying fire safety equipment.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURETH5013 Analyse and evaluate electrical and electronic faults in electric and hybrid vehicle systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETH013 Analyse and evaluate electrical and electronic faults in HEV and BEV management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate an electrical or electronic fault in the network management systems of one hybrid electric vehicle (HEV) and one battery electric vehicle (BEV)
- the above faults must involve two of the following:
  - battery management system (BMS)
  - rechargeable energy storage system (RESS)
  - power distribution unit (PDU)
  - high voltage traction motor drive assembly
  - direct current (DC) to DC converter assembly
  - RESS cooling system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating electrical and electronic faults in HEV and BEV management systems, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages on vehicle electrical systems
    - working with hazardous materials and toxic substances
    - wearing jewellery while working around high electrical currents
  - minimising risk, including:

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        - analysing task to define risk
        - applying electrical safety precautions, including ‘one hand’ rule, live system warning tags and signs, depowering the vehicle, isolating the HV RESS electrical supply, and stabilising the vehicle HV electrical systems
    - using personal protective equipment (PPE), including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
    - identifying and using fire safety equipment
- methods for locating and content of manufacturer specifications, workplace procedures, Australian standards and Australian Design Rules (ADRs) relating to embedded network management systems of HEV, plug-in hybrid electric vehicle (PHEV) and BEV
- principles and processes involved in planning and implementing analysis and evaluation of electrical and electronic faults in HEV, PHEV and BEV embedded network management systems
- design and planning of diagnostic procedures for electrical and electronic faults in HEV and BEV management systems, including procedures for diagnosing:
    - mechanical faults
    - electrical faults
    - electronics faults
- types, function and operation of hybrid and battery electric vehicle systems, including:
    - DC electric motor types, including:
        - separately excited motors
        - permanent magnet motors
    - alternating current (AC) electric motor types, including:
        - induction motors
        - brushless motors
    - HV traction motor drive assembly and motor controllers, including:
        - variable pulse width DC types
        - variable frequency and variable amplitude AC motor types
    - on-board RESS system and batteries, including:
        - lead acid
        - nickel metal hydride
        - lithium ion
        - ultra capacitors and super capacitors
    - key features of associated components and systems, including:
        - BMS
        - PDU
        - DC to DC converter assembly
        - RESS cooling system, including the vehicle HVAC system
    - parallel HEVs and PHEVs
    - series HEVs and PHEVs
    - power split HEVs and PHEVs

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- testing procedures for HEV and BEV management systems, including:
  - vehicle dynamic and static testing procedures
  - abnormal noise analysis
  - component failure analysis
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate electrical and electronic faults in HEV, PHEV and BEV management systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
- procedures for documenting and reporting the analysis and evaluation process
- requirements of AS 5732 Electric vehicle operations: Maintenance and repair relating to HEV, PHEV and BEV management systems.
- requirements of Australian Design Rules (ADRs) relating to HEV, PHEV and BEV management systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the HEV, PHEV and BEV management systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- PPE, including electrical safety gloves with 1000 volt rating and Australian standards rated HV insulating mat
- AS 5732 Electric vehicle operations: Maintenance and repair
- manufacturer HEV, PHEV or BEV management system specifications
- one HEV with a network management system fault
- diagnostic equipment for HEV and BEV management systems, including:
  - digital multimeter
  - scan tool
  - oscilloscope
- tools, equipment and materials appropriate for analysing and evaluating electrical and electronic faults in HEV and BEV management systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETK001 Identify, select and use low voltage electrical test equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify, select and safely use basic low voltage (LV) electrical test equipment to test basic LV electrical circuits in vehicles or machinery.

It applies to those working in the automotive service and repair industry. The electrical systems and components include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, motorcycles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Tools and Equipment

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and select LV electrical test equipment	1.1 Job requirements are determined according to workplace instructions 1.2 ***LV electrical test equipment*** is identified and selected to meet job requirements 1.3 Function and method of operation of equipment are confirmed before use 1.4 LV electrical test equipment is checked for serviceability according to manufacturer specifications and workplace procedures 1.5 Hazards associated with the work are identified and risks are managed 1.6 ***Safety requirements*** and safe operating procedures for equipment are accessed and interpreted
2. Use electrical test equipment	2.1 Equipment is connected according to workplace procedures and without causing damage to vehicle or machinery 2.2 Electrical test equipment is used according to safety requirements to prevent injury to self and others, and damage to vehicle or other workplace equipment 2.3 Test results or readings are interpreted and confirmed according to job requirements and workplace procedures 2.4 Damaged, faulty or inaccurate electrical test equipment is tagged and isolated for repair or replacement and reported according to workplace procedures
3. Complete work processes	3.1 Electrical test equipment is cleaned, checked and stored ready for use according to workplace procedures 3.2 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Reading skills to:	• interpret text, symbols and basic electrical diagrams in manufacturer literature and safe operating procedures.
Writing skills to:	• legibly and accurately record test measurements and enter correct information on tags of faulty LV electrical test equipment.
Oral communication skills to:	• clarify instructions, confirm use and suitability of LV electrical test equipment, and report findings.
Numeracy skills to:	• measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• select and prepare appropriate LV electrical test equipment to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

LV electrical test equipment must include:	• test lights and probes • circuit continuity testers • digital multimeters.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE)
	  • identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems.

Unit Mapping Information

Equivalent to AURETK1001 Identify, select and use low voltage electrical test equipment

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Links

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Assessment Requirements for AURETK001 Identify, select and use low voltage electrical test equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- use a test light or probe to check the voltage supply at three different points of a basic low voltage (LV) electrical circuit and earth return at two different points of the circuit
- use a digital multimeter to check voltage, current and resistance measurements within a basic electrical circuit
- use a circuit continuity tester and test three different electrical circuits between a power source, including:
  - one fuse
  - one lamp or heating element
  - one motor control device.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to identifying, selecting and using LV electrical test equipment, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
- location and content of manufacturer specifications and workplace procedures, including:
  - LV test equipment selection procedures
  - basic checking procedures for automotive LV electrical test equipment
  - checking, identification and isolation procedures for faulty equipment

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- types, characteristics, uses and limitations of automotive LV electrical test equipment, including:
  - multimeters
  - test lights, including resistive and light emitting diode (LED) test probes
  - circuit continuity testers
- procedures for testing electrical systems, including:
  - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
  - checking resistance, current flow and voltage drop of system circuits
- procedures for identifying and tagging damaged electrical test equipment.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the LV electrical test equipment they have identified, selected and used, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive service repair workplace or simulated workplace
- manufacturer specifications and operator instructions for LV electrical test equipment
- materials and equipment relevant to using and checking automotive LV electrical test equipment
- LV electrical test equipment, including:
  - test lights and probes
  - circuit continuity testers
  - digital multimeters
- electrical components and circuits requiring the use of LV electrical test equipment, as specified in the performance evidence.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETK002 Use and maintain electrical test equipment in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to select, use and maintain electrical test equipment used in an automotive workplace for the purpose of identifying, diagnosing and rectifying electrical and electronic faults in vehicles or machinery.

It applies to those working in the automotive service and repair industry. The electrical systems and components include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, motorcycles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Tools and Equipment

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Select and use electrical test equipment	1.1 Job requirements are determined according to workplace instructions 1.2 Electrical test equipment is identified and selected to meet job requirements 1.3 Electrical test equipment is checked and calibrated according to manufacturer specifications and workplace procedures 1.4 Personal protective equipment (PPE) required for the work is selected and checked before use 1.5 Hazards associated with the work are identified and risks are managed 1.6 Electrical test equipment is used according to manufacturer specifications and ***safety requirements*** 1.7 Electrical circuits are tested according to workplace procedures and without causing damage to systems and components
2. Service, maintain and store electrical test equipment	2.1 Electrical test equipment is serviced, calibrated and maintained within scope of responsibility according to manufacturer specifications and workplace procedures 2.2 Calibration inspection schedules and procedures are determined to ensure reliable and accurate operation 2.3 Damaged, faulty or inaccurate electrical test equipment is tagged and isolated for repair or replacement, and reported according to workplace procedures
3. Complete work processes	3.1 Electrical test equipment is cleaned, checked and stored ready for use according to workplace procedures 3.2 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Reading skills to:	• interpret requirements of safe operating procedures • interpret text, symbols and basic electrical wiring diagrams in manufacturer specifications and electrical test equipment operating instructions • interpret information on service tags identifying faulty electrical test equipment.
Writing skills to:	• legibly record electrical measurements taken when testing electrical circuits and components • legibly and accurately enter information on service tags, and in electrical test equipment service and maintenance schedules.
Oral communication skills to:	• clarify instructions, confirm use, suitability and maintenance requirements of electrical test equipment, and report findings.
Numeracy skills to:	• measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• select and prepare appropriate electrical test equipment to ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • identifying hazards and controlling risks associated with:
	  • working on high voltage ignition systems
	  • wearing jewellery while working around high current wiring systems.

Unit Mapping Information

Equivalent to AURETK2002 Use and maintain automotive electrical test equipment

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Links

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Assessment Requirements for AURETK002 Use and maintain electrical test equipment in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- use a test lamp to check for continuity, voltage supply and earth return in a basic electrical circuit
- use a multimeter to measure:
  - voltage, current and resistance in a basic electrical circuit
  - continuity between a control unit and sensor
  - voltage drop across an electrical resistive load
- use an inductive clamp to measure current flowing in a vehicle starting system
- gain the oscilloscope waveforms of two of the following engine sensors or actuator:
  - camshaft
  - crankshaft
  - knock
  - fuel injector
- service, maintain and store three different pieces of electrical test equipment
- identify and tag one faulty piece of electrical test equipment.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to using and maintaining electrical test equipment in an automotive workplace, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with:

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    - working on high voltage ignition systems
    - wearing jewellery while working around high current wiring systems
- types, characteristics, uses, limitations and calibrating requirements of automotive electrical test equipment, including:
    - test lights, including resistive and light emitting diode (LED)
    - continuity testers
    - test probes, including those for testing voltage positive and negative status
    - voltmeters, ammeters and ohmmeters
    - digital multimeters
    - circuit load testers, including alternating current (AC) and direct current (DC) clamp testers
    - oscilloscopes
    - databus test instruments
- testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - selecting test equipment
    - checking resistance, current flow and voltage drop of system circuits
- location and content of workplace procedures and manufacturer specifications, including:
    - basic maintenance procedures for automotive electrical test equipment
    - procedures for checking, identifying and isolating faulty equipment.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electrical test equipment that they have selected, used and maintained, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- manufacturer specifications and operator instructions for electrical test equipment
- materials and equipment appropriate for using and maintaining automotive electrical test equipment
- electrical test equipment specified in the performance evidence
- electrical components and circuits requiring the use of electrical test equipment, as specified in the performance evidence.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETK003 Operate electrical test equipment

Modification History

Release	Comment
Release 1	New unit of competency
Release 2	Minor typographical errors corrected

Application

This unit describes the performance outcomes required to operate electrical test equipment.

It requires the learner to plan and prepare the task, select the correct equipment, test electrical and electronic circuits, and check and store the electrical test equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Tools and Equipment

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section
1. Plan to operate electrical test equipment	1.1 ***Safety requirements*** are sourced and interpreted 1.2 Task instruction is interpreted and vehicle electrical circuit to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for operating electrical test equipment are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 Electrical test equipment is identified according to task instruction and manufacturer specifications
2. Test electrical circuits	2.1 ***Electrical test equipment*** is checked prior to use according to manufacturer specifications and safety requirements 2.2 Electrical test equipment is used to test vehicle electrical circuits according to manufacturer specifications and safety requirements 2.3 Electrical test equipment readings are checked and compared with manufacturer specifications 2.4 Electrical test equipment readings are recorded
3. Complete work processes	3.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle or equipment is presented ready for use or storage according to workplace procedures 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 3.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Learning skills to:	• locate appropriate sources of vehicle electrical system information and electrical test equipment operating procedures.
Reading skills to:	• select and interpret key information from job instruction, manufacturer specifications, safety requirements and workplace procedures to safely and effectively operate electrical test equipment • select and interpret key information from environmental requirements and workplace procedures to support environmental sustainability and to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation, using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division, when using Ohm's law and Watt's law to calculate electrical voltage, current flow, resistance and power • read and interpret electrical test equipment correctly, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. Ω for ohms).
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes.
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• refer problems that cannot be readily resolved and seek assistance from workplace supervisor.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• information about key aspects of work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
	  • use of personal protective equipment, including safety glasses, ear protection and safety footwear
	  • use of tools

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	• identification of electrical hazards • application of procedures for operating electrical test equipment.
Electrical test equipment must include:	• 12 volt test lights and LED test lights • ammeters • voltmeters • ohmmeters • multimeters.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETK003 Operate electrical test equipment

Modification History

Release	Comment
Release 1	New unit of competency
Release 2	Minor typographical errors corrected

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly and safely operate electrical test equipment to test electrical circuits on a minimum of two different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS) and, occupational health and safety (OHS) requirements when operating electrical test equipment, including:
- procedures for the correct use of personal protective equipment, including safety glasses, ear protection and safety footwear
- procedures for the correct use of tools
- identification of electrical hazards

  procedures for operating electrical test equipment
- meaning of electrical terms, including:
  - voltage
  - amperage
  - watts
  - resistance
- theory of electrical circuits, including:
  - Ohm's law
  - Watt's law
- circuit types, including series and parallel
- electrical component symbols

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- types of electrical circuits in vehicles, including electrical components
- types of electrical circuit diagrams
- types, application and operation of electrical test equipment, including:
  - 12 volt test lights and LED test lights
  - ammeters
  - voltmeters
  - multimeters
  - ohmmeters
- procedures for testing electrical circuits on vehicles
- procedures for identifying and rectifying faults
- work area clean-up and maintenance requirements.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to operating electrical test equipment, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- electrical test equipment, including:
  - 12 volt test light
  - ammeter
  - voltmeter
  - ohmmeter
  - multimeter
  - LED test light
- two vehicles with operational electrical circuits.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR001 Remove and tag automotive electrical system components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify, remove and tag a range of automotive electrical system components. It involves preparing for the work, removing and tagging components by title, job number and application, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and tag electrical system component	1.1 Task instructions are interpreted and electrical system to be worked on is identified 1.2 Electrical system component information is accessed and interpreted 1.3 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.4 Tools and equipment are selected and checked for serviceability
2. Remove component	2.1 Component for removal is identified 2.2 Component is removed according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to components or systems 2.3 Removed component is inspected and findings are recorded according to workplace procedures
3. Tag component	3.1 Tagging procedures are identified 3.2 Removed component is legibly ***tagged*** according to workplace procedures and without causing damage to components or systems 3.3 Tagged component is stored according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instruction and workplace standards 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer and workshop literature relating to electrical system components.
Writing skills to:	• legibly and accurately fill out workplace documentation, including tags, using correct industry terminology and conventions.
Numeracy skills to:	• interpret numerical information in task instructions and part numbers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current electrical circuits • environmental requirements, including procedures for disposing of waste materials.
Tagged must include:	• component title • component condition • job number.

Unit Mapping Information

Equivalent to AURETR1001 Remove and tag automotive electrical system components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR001 Remove and tag automotive electrical system components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and tag six of the following automotive electrical system components:
  - main fuse panel
  - battery
  - starter motor
  - alternator
  - ignition system
  - engine control module
  - body control module
  - flasher can relay
  - brake stop lamp switch
  - electric fuel pump.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and tagging automotive electrical system components, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current electrical circuits
- environmental requirements, including procedures for disposing of waste materials
- types and location of automotive electrical system components, including:
  - main fuse panels
  - batteries

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  - starter motors
  - alternators
  - ignition systems
  - engine control modules
  - body control modules
  - flasher can relays
  - brake stop lamp switches
  - electric fuel pumps
- procedures for removing and tagging electrical system components, including:
  - component removal
  - component inspection
  - component tagging, including key information required on tags
  - component storage.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle electrical system components that they have removed and tagged, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer specifications for the electrical system components
- one vehicle or machinery with the electrical system components specified in the performance evidence requiring removal and tagging
- tools, equipment and materials appropriate for removing and tagging electrical system components.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR002 Inspect heavy vehicle battery storage systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect battery storage systems in heavy vehicle and machinery according to manufacturer specifications. It involves preparing for the task, inspecting the system, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect battery storage system	1.1 Task instructions are interpreted and vehicle to be worked on is identified 1.2 Inspection information is accessed and interpreted 1.3 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect system	2.1 ***Inspection*** is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle or machinery is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer and workshop literature when seeking inspection procedures and specifications relating to battery storage systems.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.

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Skills	Description
Numeracy skills to:	• interpret numerical information on batteries.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Inspection must include:	• inspecting battery, terminals and leads • inspecting battery securing system • inspecting battery storage compartment.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
	  • working safely with high current electrical systems
	  • manually handling batteries and toxic and corrosive substances.

Unit Mapping Information

Equivalent to AURETR1002 Test, service and maintain battery storage systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR002 Inspect heavy vehicle battery storage systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect the heavy vehicle battery storage system of one heavy vehicle or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting heavy vehicle battery storage systems, including procedures for:
  - selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
  - working safely with high current electrical systems
  - manually handling batteries and toxic and corrosive substances
- identification and function of heavy vehicle battery storage system components, including:
  - base, cover and box
  - battery hold down systems
  - ventilation and cooling systems
  - battery switching devices
- inspection procedures of heavy vehicle battery storage systems, including:
  - inspecting battery, terminals and leads
  - inspecting battery securing systems
  - inspecting battery storage compartments.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle or machinery battery storage systems that they have inspected, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer battery storage system specifications
- one heavy vehicle or machinery with battery storage system requiring inspection
- tools, equipment and materials appropriate for inspecting heavy vehicle battery storage systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR005 Install automotive security systems and components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install and test automotive security systems and components in vehicles or machinery. It involves preparing for the task, installing and testing system and component operation, and completing workplace processes and documentation. The security systems and components will not require programming following installation as they do not communicate with the vehicle or machinery controller area network databus (CAN-bus or LIN-bus) topography.

It applies to those working in the automotive service and repair industry. The electrical security systems and components include those being installed in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install security system and components	1.1 Job requirements are determined according to workplace instructions 1.2 Manufacturer specifications and installation fitting instructions are accessed and interpreted 1.3 Installation options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment are selected and checked for serviceability
2. Install and test security system and components	2.1 Security system and components are checked for correct application and damage 2.2 Security system is installed according to manufacturer specifications, workplace procedures and ***safety requirements***, and without causing damage to components or systems 2.3 Installed system and components are tested for correct operation according to workplace procedures and manufacturer specifications 2.4 Post-installation testing of other electrical systems is carried out according to workplace procedures to confirm correct operation, and any problems detected as having been introduced during the installation process are rectified
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking specifications and procedures • interpret text, symbols and wiring diagrams in electrical security system and component fitting information in manufacturer specifications and workplace procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting work performed and recording parts and material used.
Oral communication skills to:	• clarify instructions, report findings and make installation recommendations.
Numeracy skills to:	• match materials and component part numbers to work instructions and vehicle and machinery component part lists • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use workplace technology and tools relating to the installation of electrical security systems and components, such as multimeters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using specialised tools and equipment
	  • selecting and using personal protective equipment (PPE)
	  • identifying hazards and controlling risks associated with:
	  • working on high voltage ignition systems
	  • wearing jewellery while working around high current wiring systems.

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Unit Mapping Information

Equivalent to AURETR2005 Install, test and repair electrical security systems and components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR005 Install automotive security systems and components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- install two of the following security systems and components on non controller area network databus (CAN-bus) systems in different vehicles, vessels or machinery, including:
  - security alarm systems
  - single point immobilisation (engine start inhibit)
  - tilt, impact and vibration shock alarm activation sensors
  - audible and visual alert alarm equipment
  - theft alert vehicle and equipment tracking systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing automotive security systems and components, including procedures for:
  - using specialised tools and equipment
  - selecting and using personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with:
    - working on high voltage ignition systems
    - wearing jewellery while working around high current wiring systems
- types and basic operation of automotive security systems, including:
  - complete vehicle or equipment security alarm systems
  - single point immobilisation (engine start inhibit)

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  - dual point immobilisation (engine start inhibit and fuel shut-off)
  - tilt, impact and vibration shock alarm activation sensors
  - audible and visual alert alarm equipment
  - theft alert vehicle and equipment tracking systems
- procedures for installing automotive security systems and components, including:
  - techniques for reading and interpreting technical information, wiring diagrams and graphic symbols
  - methods of determining wiring and connection type and size for system
  - methods of determining placement of components on vehicle or machinery
  - methods of connecting system and components to existing electrical system without causing damage or problems, including:
    - selecting and soldering wires
    - selecting and crimping terminals
    - removing and replacing connectors
    - removing and replacing existing electrical components
- post-installation testing procedures of automotive security system and components, including procedures for:
  - checking full operation of installed system
  - checking operation of existing electrical systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the automotive security systems and components that they have installed in vehicles, vessels or machinery, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- wiring specifications relevant to vehicle, vessel or machinery systems and components being installed
- two different vehicles, vessels or machinery requiring the installation of security systems and components
- tools, equipment and materials appropriate for installing automotive security systems and components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR006 Solder electrical wiring and circuits

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to solder electrical components, electrical circuits and system wiring. It involves preparing for the task, preparing components, circuits and wiring for soldering, carrying out soldering, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The electrical wiring and circuits include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

Elements	P**erformance Criteria**
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	P**erformance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to solder electrical wiring and circuits	1.1 Job requirements are determined according to workplace instructions 1.2 Technical procedures and information are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment are selected and checked for serviceability
2. Prepare components, circuits and wiring for soldering	2.1 Materials and components to be joined are selected and prepared according to workplace procedures and ***safety and environmental requirements*** 2.2 Solder and flux type are identified and prepared 2.3 Soldering equipment is cleaned and prepared ready for use
3. Carry out soldering of components, circuits and wiring	3.1 Soldering is carried out according to workplace quality expectations, and without causing damage to vehicle, components, electrical circuits and system wiring 3.2 Soldered connection is inspected visually and checked to ensure effectiveness
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams relating to soldering repair information in manufacturer specifications, and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation, recording parts and material used.
Numeracy skills to:	• interpret measurements of wire size and gauge relating to electrical wiring and circuits to select correct items • measure components to determine compliance with manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised workplace technology, including soldering irons and heat guns.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using safety data sheets (SDS)
	  • selecting and using personal protective equipment (PPE)
	  • safely handling materials during solder process
	  • safely operating soldering equipment
	  • identifying and using firefighting and first aid equipment
	• environmental requirements, including procedures for trapping, storing and disposing of material released during soldering process.

Unit Mapping Information

Equivalent to AURETR2006 Carry out soldering of electrical wiring and circuits

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR006 Solder electrical wiring and circuits

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- solder the wiring of six different electrical components, in which the work must involve:
  - different sized gauge wires
  - electrical terminals
  - resin core solder
  - heat shrink sleeving.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to soldering electrical wiring and circuits, including procedures for:
  - using safety data sheets (SDS)
  - selecting and using personal protective equipment (PPE)
  - safely handling materials during solder process
  - safely operating soldering equipment
  - identifying and using firefighting and first aid equipment
- environmental requirements, including procedures for trapping, storing and disposing of material released during soldering process
- location and content of workplace preparation and soldering procedures, SDS and manufacturer specifications
- procedures for preparing to solder electrical wiring and circuits, including:
  - preparing and cleaning components to be soldered, including selecting appropriate cleaning solutions

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  - methods of holding components to be soldered
  - soldering fluxes and their application
  - resin core solder types, diameter and application
  - types and applications of soldering irons
- procedures for soldering electrical wiring and circuits, including:
  - applying heat and solder to the parts to be joined
  - allowing cooling without movement
- work completion procedures for soldering electrical wiring and circuits, including procedures for final visual inspection of soldered connections, including:
  - manufacturer and workplace specifications for acceptable soldering standard
  - post-soldering insulation, including heat shrink sleeving and application of electrical tape.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electrical wiring and circuits that they have soldered, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- six different electrical components requiring soldering of their wiring
- tools, equipment and material appropriate for soldering electrical components, circuits and system wiring, including:
  - automotive wiring
  - range of electrical terminals
  - resin core solder
  - heat shrink sleeving
  - soldering iron.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR007 Apply knowledge of automotive electrical circuits and wiring systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to apply knowledge of electrical principles during the testing and repair of basic electrical circuits in vehicles, vessels and machinery.

It applies to those working in the automotive service and repair industry. The electrical circuits and wiring systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify relevant information of electrical circuit and wiring system construction and operation in work activities	1.1 Components of circuit are identified during testing and repair activities 1.2 Functions of circuit components are identified during testing and repair activities 1.3 Relationships between circuit components, including the effects of testing and repair activities on other electrical circuits, are identified during repair activities
2. Apply relevant information of electrical circuit and wiring system construction and operation in work activities	2.1 Knowledge of electrical circuit construction and operation is used during testing or repair activities to carry out work according to manufacturer specifications and workplace procedures 2.2 ***Basic electrical principles*** are used during fault finding procedures 2.3 Knowledge of ***basic testing procedures*** is used when using electrical test equipment
3. Evaluate knowledge of electrical circuit and wiring systems	3.1 Knowledge is regularly checked with colleagues and supervisor to ensure currency and accuracy 3.2 Knowledge is updated as required to complement own work role

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret a range of written technical information relating to automotive electrical circuits and wiring systems.
Numeracy skills to:	• interpret numbers and units relating to electrical circuits and wiring systems in automotive technical information • interpret electrical measurements of voltage, current and resistance relating to electrical circuits

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Skills	Description
	• interpret wiring gauge dimensional measurements • use basic mathematical operations and common electrical formulas to calculate voltage drop, resistance, current flow and electrical power.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Basic electrical principles must include:	• relationship between electrical current flow, pressure, resistance and power using Ohm's law.
Basic testing procedures must include:	• voltage drop • circuit resistance • circuit current flow.

Unit Mapping Information

Equivalent to AURETR2007 Demonstrate knowledge of automotive electrical circuits and wiring systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR007 Apply knowledge of automotive electrical circuits and wiring systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- apply knowledge of automotive electrical circuits and wiring systems during the testing and repair of the electrical systems of three different vehicles, vessels or machinery
- evaluate and expand knowledge of automotive electrical circuits and wiring systems, including demonstrating knowledge of one of the following:
  - a new automotive electrical or electronic testing procedure
  - a new automotive electrical or electronic repair procedure
  - a new item of automotive electrical or electronic technology.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- types and location of sources of technical information relating to automotive electrical systems, including:
  - workplace service information
  - automotive engine mechanical texts
  - vehicle workshop manuals
  - service bulletins
  - technical articles
  - automotive textbooks
- features of vehicle electrical circuits, including:
  - voltage source
  - current load devices
  - resistive devices

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    - circuit protection devices
    - switching circuit devices
    - series circuits
    - parallel circuits
    - series parallel circuits
    - relationships between:
        - volts, amps and ohms in vehicle electrical circuits
        - current flow and required wire gauge to carry the current
        - voltage drop across resistive load and current flowing in the circuit
- common fault types found in vehicle electrical circuits, including:
    - open circuit to power, signal and ground
    - short circuit to power, signal and ground
    - high resistance to power, signal and ground
- types and construction of vehicle electrical wiring systems, including:
    - common multi-strand conductor
    - various wire gauges and insulation types
    - controller area network databus (CAN-bus) twisted pair wiring
    - audio speaker shielded wiring
- principles of electricity, including:
    - alternating current (AC)
    - direct current (DC)
    - Ohm’s law
    - Watts law
    - Kirchhoff’s voltage law
    - Kirchhoff’s current law
- identification, location and function of major components of common automotive electrical systems:
    - engine electrical systems, including:
        - battery
        - ignition
        - charging
        - starting
    - vehicle body electrical systems, including:
        - exterior lighting
        - internal lighting
        - vehicle access
        - washer and wiper
        - vehicle entertainment
        - wiring harness and loom assembly.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the knowledge of electrical circuits and wiring systems that they have applied, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- technical information relating to automotive electrical circuits and wiring systems
- automotive tools and electrical test equipment
- three different vehicles, vessels or machinery with functional electrical systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR008 Remove and replace electrical units and assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and replace electrical units and assemblies. Electrical units and assemblies include headlights, tail-lights, and vehicle and machinery control modules that do not require programming procedures on replacement. These electrical units and assemblies are not connected to vehicle controller area network databus (CAN-bus) topography.

It applies to those working in the automotive service and repair industry. The electrical units and assemblies include those fitted to agricultural machinery, heavy commercial vehicles, light vehicles, vessels, motorcycles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and replace electrical unit and assemblies	1.1 Job requirements are determined from workplace instructions 1.2 Workplace procedures and manufacturer specifications are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment are selected and checked for serviceability
2. Remove electrical unit and assembly	2.1 Removal information is accessed and interpreted from manufacturer and component supplier specifications 2.2 Electrical unit and assembly are removed using approved methods, tools and equipment and according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.3 Unit and assembly are handled and stored according to manufacturer and component supplier requirements
3. Replace electrical unit and assembly	3.1 Replacement information is accessed and interpreted from manufacturer and component supplier specifications 3.2 Electrical unit and assembly are replaced using approved methods, tools and equipment and according to manufacturer specifications and workplace procedures
4. Test electrical unit and assembly	4.1 Replaced electrical unit and assembly are checked and tested to confirm correct operation and that no other problems are present, according to workplace procedures and without causing damage to components or systems 4.2 Test results are reported according to workplace procedures, including recommendations for repairs or adjustments as required
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and diagrams in manufacturer specifications, safe operating procedures, and other workplace information.
Writing skills to:	• legibly and accurately fill out workplace documentation relating to removing and replacing electrical units and assemblies.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• match component part numbers to workplace instructions and vehicle and component part lists • interpret measurements of voltage, current and resistance relating to electrical units and assemblies • measure materials and components to determine compliance with manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised testing equipment, such as multimeters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with:
	  • working with vehicle ignition systems with injector high voltages
	  • wearing jewellery while working around high current wiring

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	systems.

Unit Mapping Information

Equivalent to AURETR2008 Remove and replace electrical units and assemblies

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR008 Remove and replace electrical units and assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- remove and replace two of the following systems on the non controller area network databus (CAN-bus) circuits of two different vehicles or machinery:
  - headlight or tail-light assembly
  - windscreen washer and wiper motor assembly
  - door and window motor assembly
  - central door locking system
  - electric mirror assembly
  - electric brake controllers.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and replacing electrical units and assemblies, including procedures for identifying hazards and controlling risks associated with:
  - working with vehicle ignition systems with injector high voltages
  - wearing jewellery while working around high current wiring systems
- procedures for removing, replacing, and testing electrical units and assemblies, including procedures for adjusting and calibrating systems and components
- key features of basic non CAN-bus networked electrical units and assemblies, including:
  - headlight assemblies
  - tail-light assemblies
  - side and rear vision mirrors

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  - windscreen washer and wiper motor assemblies
  - door and window motor assemblies
  - central door locking systems
  - electric brake controllers
- types of wiring systems found in vehicles, including:
  - basic wiring
  - twisted pair
  - shielded wiring
  - CAN-bus wiring
- options for diagnosing faults, including:
  - continuity testing
  - insulation testing
  - isolating possible faults
  - replacing blown fuses or circuit breakers
  - replacing damaged connectors or terminals
  - visually inspecting and evaluating components
- location and content of technical information, wiring diagrams and graphic symbols relating to electrical units and assemblies
- procedures for testing electrical systems, including:
  - accessing electrical terminals and using test probes without damaging connectors, fuse holders and wiring
  - checking resistance, current flow and voltage drop of system circuits.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having removed and replace electrical units and assemblies in vehicles or machinery, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workshop or simulated workplace
- workplace instructions
- manufacturer specifications relating to removing and replacing electrical units and assemblies
- two different vehicles or machinery with faults in their electrical systems
- tools and electrical test equipment appropriate for diagnosing electrical units and assemblies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR009 Install vehicle lighting and wiring systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install vehicle, vessel or machinery low voltage (LV) direct current (DC) lighting and wiring systems that are not an integral part of vehicle or machinery controller area network databus (CAN-bus) topography. It involves preparing for the task, installing and testing the operation of lighting and wiring systems, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. LV lighting and wiring systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install, lighting and wiring system	1.1 Job requirements are determined according to workplace instructions 1.2 Manufacturer specifications and installation fitting instructions are accessed and interpreted 1.3 Installation options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment are selected and checked for serviceability
2. Install and test system	2.1 Lighting and wiring system and components are checked for correct application and damage 2.2 Lighting and wiring system is installed according to manufacturer specifications, workplace procedures and ***safety requirements***, and without causing damage to components or other systems 2.3 Installed system and components are tested for correct operation according to workplace procedures and manufacturer specifications 2.4 Post-installation testing of other electrical systems is carried out according to workplace procedures to confirm correct operation, and that any problems detected as having been introduced during installation process are rectified
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking specifications and procedures • interpret text, symbols and wiring diagrams in lighting and wiring system and component information in manufacturer specifications, fitting instructions and workplace procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting work performed and recording parts and material used.
Oral communication skills to:	• clarify instructions, report findings, and make installation recommendations.
Numeracy skills to:	• match materials and component part numbers to work instructions and component part lists • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• select most appropriate installation option from a range of options.
Technology skills to:	• use workplace technology and specialised tools, including multimeters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using specialised tools and equipment
	  • selecting and using personal protective equipment (PPE)
	  • identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems.

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Unit Mapping Information

Equivalent to AURETR2009 Install, test and repair vehicle lighting and wiring systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR009 Install vehicle lighting and wiring systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- install two of the following low voltage (LV) lighting and wiring systems in non controller area network databus (CAN-bus) systems in two different vehicles, vessels or machinery:
  - trailer lights and wiring harness
  - driving lights and wiring harness
  - side clearance lamp
  - high-mount rear brake lamp
  - ascent strip light emitting diode (LED) lamp
  - filament lamp to LED lamp replacement.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing vehicle lighting and wiring systems, including procedures for:
  - using specialised tools and equipment
  - selecting and using personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
- LV direct current (DC) lighting and wiring systems of the following:
  - trailer lights and wiring harnesses
  - driving lights and wiring harnesses
  - side clearance lamps

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    - high-mount rear brake lamps
    - ascent strip LED lamps
- procedures for installing LV DC lighting and wiring systems, including:
    - filament lamp to LED lamp replacement
    - resistance and voltage drop
    - circuit performance checks
    - connecting system and components to existing electrical system without causing damage or problems, including:
        - selecting and soldering wires
        - selecting and crimping terminals
        - removing and replacing connectors
        - removing and replacing existing electrical components
- different cable types and sizes and their current carrying capacity
- types of wiring systems found in vehicles, vessels or machinery, including:
    - basic wiring
    - twisted pair
    - shielded wiring
- techniques for reading and interpreting technical information, fitting instructions, wiring diagrams and graphic symbols
- post-installation testing procedures, including:
    - confirming that electrical system is operating to manufacturer specifications following installation
    - confirming that no other problems are present as a result of installing LV DC lighting and wiring systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the lighting and wiring systems that they have installed, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- two different vehicles, vessels or machinery requiring the installation of LV DC lighting and wiring systems
- materials appropriate for installing LV DC lighting and wiring systems
- equipment, and hand and power tools appropriate for installing LV lighting and wiring systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR010 Repair wiring harnesses and looms

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to test an existing wiring harness and loom, remove, fabricate and fit the new wiring harness and loom, and then test its operation. It involves preparing for the task, performing the work, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The wiring harnesses and looms include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to repair wiring harness and loom	1.1 Job requirements are determined according to workplace instructions 1.2 Technical procedures and information are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Tools and equipment*** are selected and checked for serviceability
2. Test wiring harness and loom assembly	2.1 Wiring harness and loom are inspected for damage 2.2 Harness and loom are tested using appropriate tools and fault finding techniques according to workplace procedures and ***safety and environmental requirements***, and without causing damage to components or systems 2.3 Inspection and test results are compared with manufacturer specifications 2.4 Faults are identified from test results and causes of faults are determined
3. Remove wiring harness and loom	3.1 Wiring harness, loom assembly and associated components are labelled before removal 3.2 Harness and loom components are removed according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems
4. Repair and refit wiring harness and loom	4.1 Electrical circuit wiring diagrams are accessed and interpreted from manufacturer and component supplier specifications 4.2 Harness and loom are repaired or fabricated using appropriate techniques and according to workplace procedures 4.3 Repaired or fabricated harness and loom assembly is refitted and reconnected according to manufacturer and component supplier specifications 4.4 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair or fabrication process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	5.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams relating to fabricating, testing and repairing wiring harnesses and looms in manufacturer specifications, and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording parts and material used.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• match component part numbers to workplace instructions and vehicle and component part lists • interpret measurements of wire size and gauge relating to wiring harnesses and loom fabrication and repairs • measure components to determine compliance with specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised workplace technology, tools and equipment relating to repairing wiring harnesses and looms, such as soldering irons and heat shrink insulation.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include:	• multimeter • continuity tester • crimping tools • soldering equipment • heat gun • terminals and connectors • wire and cabling.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using safety data sheets (SDS)
	  • selecting and using personal protective equipment (PPE)
	  • identifying firefighting equipment
	  • safely handling hazardous materials and toxic substances
	  • following soldering equipment safe operating procedures
	• environmental requirements, including procedures for trapping, storing and disposing of hazardous materials and toxic substances released during repair processes.

Unit Mapping Information

Equivalent to AURETR2010 Fabricate, test and repair wiring harnesses and looms

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR010 Repair wiring harnesses and looms

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- repair an existing basic wiring harness or loom assembly of the wiring systems of two different vehicles, vessels or machinery
- fabricate a new basic wiring harness or loom assembly for the wiring system of one vehicle, vessel or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing wiring harnesses and looms, including procedures for:
  - using safety data sheets (SDS)
  - selecting and using personal protective equipment (PPE)
  - identifying firefighting equipment
  - safely handling hazardous materials and toxic substances
  - following soldering equipment safe operating procedures
- environmental requirements, including procedures for trapping, storing and disposing of hazardous materials and toxic substances released during repair processes
- location and content of workplace procedures and manufacturer specifications relating to wiring harnesses and looms
- types of wiring systems found in vehicles, including:
  - basic single wiring, including:
    - tailer harness
    - driving lights harness

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    - accessory wiring harness
  - complex multi-wiring with varying wire gauges
  - controller area network databus (CAN-bus) wiring, including:
    - twisted pair
    - shielded wiring
- testing procedures, including:
  - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
  - testing wiring harnesses and looms, including resistance and voltage drop and circuit performance checks
  - visual and functional assessments, including:
    - component damage and wear
    - component corrosion
    - water and moisture ingress
    - damaged insulation
    - frayed wires
    - burnt wiring
    - terminal and connector damage
- removal procedures for wiring harnesses and looms, including:
  - accessing wiring and removing panels and covers
  - removing and replacing components
  - disconnecting terminals from connectors
- repair procedures of wiring harnesses and looms, including:
  - determining cable and terminal types and sizes according to circuit current draw
  - wire soldering procedures
  - terminal crimping
  - replacing male and female terminals within a connector housing
  - protecting and routing harness and loom
- post-repair testing procedures of wiring harnesses and looms, including procedures for checking full operation of associated electrical systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle, vessel or machinery wiring harnesses and looms that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer machinery wiring specifications
- three different vehicles, vessels or machinery requiring repairs to their wiring harnesses and looms
- tools, equipment and materials appropriate for repairing wiring harnesses and looms, including:
  - multimeter
  - continuity tester
  - crimping tools
  - soldering equipment
  - heat gun
  - terminals and connectors
  - wire and cabling.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR011 Install basic ancillary electrical systems and components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install and test basic ancillary electrical systems and components in vehicles or machinery. It involves preparing for the task, installing and testing the operation of the systems and components, and completing workplace processes and documentation. These electrical systems and components will not require programming following installation as they do not communicate with the vehicle or machinery controller area network data bus (CAN-bus or LIN-bus) topography.

It applies to those working in the automotive service and repair industry. Basic ancillary electrical systems and components include those being installed in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install basic ancillary electrical system and components	1.1 Job requirements are determined according to workplace instructions 1.2 Manufacturer specifications and installation fitting instructions are sourced and interpreted 1.3 Installation options are considered and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Install and test basic ancillary electrical system and components	2.1 Electrical system and components are checked for correct application and damage 2.2 Electrical equipment is installed according to manufacturer specifications, workplace procedures and ***safety requirements***, and without causing damage to components or systems 2.3 Installed system and components are tested for correct operation according to workplace procedures and manufacturer specifications 2.4 Post-installation testing of other electrical systems is carried out according to workplace procedures to confirm correct operation, and any problems detected as having been introduced during the installation process are rectified
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking specifications and procedures • interpret text, symbols and diagrams in basic ancillary system and component fitment information in manufacturer specifications and workplace procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting work performed and recording parts and material used.
Oral communication skills to:	• clarify instructions • report findings and make installation recommendations.
Numeracy skills to:	• match material and component part numbers to work instructions and vehicle and machinery component part lists • measure voltage, current and resistance, and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use workplace technology and tools relating to the installation of basic ancillary electrical systems and components.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using specialised tools and equipment
	  • selecting and using appropriate personal protective equipment (PPE)
	  • identifying hazards and controlling risks associated with:
	  • working on high voltage ignition systems
	  • wearing jewellery while working around high current

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	wiring systems.

Unit Mapping Information

Equivalent to AURETR2011 Install and test basic ancillary electrical components

Links

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Assessment Requirements for AURETR011 Install basic ancillary electrical systems and components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- install two of the following basic ancillary electrical systems and components to non CAN-bus embedded networked circuits in different vehicles or machinery, including:
  - driver interlocks, including alcohol interlock devices
  - remote keyless entry
  - security alarm system
  - audio system
  - mobile phone
  - speed alert system
  - navigation system
  - reverse parking aids, including sensors, audible alerts and cameras
  - driver gauges and instruments
  - electric tailer brake controller
  - trailer harness connector
  - driving lights or fog lights
  - dual battery system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing basic ancillary electrical systems and components, including procedures for:

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    - using specialised tools and equipment
    - selecting and using appropriate personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with:
        - working on high voltage ignition systems
        - wearing jewellery while working around high current wiring systems
- types and basic operation of the common ancillary electrical systems and components, including:
    - driver interlocks, including alcohol interlock devices
    - remote keyless entry systems
    - security alarm systems
    - audio systems
    - mobile phones
    - speed alert systems
    - navigation systems
    - reverse parking aids, including sensors, audible alerts and cameras
    - driver gauges and instruments
    - electric tailer brake controllers
    - trailer harness connectors
    - driving lights and fog lights
    - dual battery systems
- procedures for installing basic ancillary electrical systems and components, including:
    - techniques for reading and interpreting technical information, wiring diagrams and graphic symbols
    - methods of determining wiring and connection type and size for system
    - methods of determining placement of components on vehicle or machinery
    - methods of connecting system and components to existing electrical system without causing damage or problems, including:
        - selecting and soldering wires
        - selecting and crimping terminals
        - removing and replacing connectors
        - removing and replacing existing electrical components
- post-installation testing procedures of basic ancillary electrical systems and components, including procedures for:
    - checking full operation of installed system
    - checking operation of existing electrical systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must be by direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the basic ancillary electrical systems and components that they have installed in vehicles or machinery, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive service and repair workplace or simulated workplace
- workplace instructions
- vehicle and machinery wiring specifications relevant to systems and components being installed
- manufacturer ancillary electrical system specifications
- two different vehicles or machinery requiring installation of basic ancillary electrical systems and components
- tools, equipment and materials appropriate for installing basic ancillary electrical systems and components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR012 Test and repair basic electrical circuits

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, test and repair basic electrical circuits in vehicle and machinery electrical systems. It involves preparing for the task, inspecting and testing the circuit, repairing the circuit, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The basic electrical circuits include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, motorcycles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to test basic electrical circuit	1.1 Job requirements are determined according to workplace instructions 1.2 Testing procedures and information are accessed and interpreted 1.3 Fault finding options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and electrical test equipment are selected and checked for serviceability
2. Test circuit	2.1 Basic electrical circuit is checked to establish extent of failure or damage 2.2 Circuit is tested according to manufacturer specifications, workplace procedures and ***safety requirements***, and without causing damage to components or systems 2.3 Faults are identified from test results and causes of faults are determined 2.4 Findings are reported according to workplace procedures
3. Repair and check circuit	3.1 Repair procedures and information are accessed and interpreted 3.2 Repair options are analysed and most appropriate option is selected 3.3 Repair tools and materials are selected according to job requirements 3.4 Circuit components are repaired and adjusted according to manufacturer specifications, workplace procedures and safety requirements 3.5 Post-repair testing is carried out to confirm basic electrical circuit is operating correctly, any reported problems are resolved, and no other problems are present
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in information relating to basic electrical system testing and repair equipment from manufacturer specifications, and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation relating to testing and repairing basic electrical circuits.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• interpret vehicle electrical measurements and readings • measure voltage, current and resistance • use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised tools, such as test lights and multimeters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using specialised tools and equipment
	  • selecting and using personal protective equipment (PPE)

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	• identifying hazards and controlling risks associated with wearing jewellery while working around electrical systems.

Unit Mapping Information

Equivalent to AURETR2012 Test and repair basic electrical circuits

Links

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Assessment Requirements for AURETR012 Test and repair basic electrical circuits

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- test a basic electrical circuit, including:
  - one short circuit across an electrical resistive load
  - one open circuit before or after an electrical resistive load
  - one high resistance circuit before or after an electrical resistive load
  - current flow and voltage drop across an electrical resistive load
- test for continuity in a basic wiring harness and visually check terminals in the wiring harness for moisture ingress and corrosion
- carry out four different circuit repairs that include:
  - crimping various terminal sizes
  - soldering wire gauges to terminals
  - applying heat shrink insulation to crimped or soldered joints
  - replacing male and female terminals in a connector housing
  - performing terminal retention checks to replaced terminals.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to testing and repairing basic electrical circuits, including procedures for:
  - using specialised tools and equipment
  - selecting and using personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with wearing jewellery while working around electrical systems

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- electrical principles, including:
  - current, voltage, resistance and power
  - series circuits
  - parallel circuits
  - series parallel circuits
  - Ohm's law
- key features of basic electrical circuit components, including:
  - cable types and sizes and current carrying capacity
  - circuit protection devices
  - switches
  - relays
  - automotive globes
- techniques for reading and interpreting technical information, including circuit types, diagrams and symbols
- procedures for using and operating electrical test equipment, including:
  - digital multimeters
  - test lights suitable for circuit testing, including resistive and light emitting diode (LED)
  - test probes suitable for testing circuit continuity
  - fused test lead
  - procedures for checking, identifying and isolating faulty equipment
- common types of faults, including:
  - open circuits
  - high resistance circuits
  - short circuits
  - damaged insulation
  - frayed wires
  - burnt wiring
  - water and moisture ingress
  - connector damage
  - terminal damage
- testing procedures for electrical systems, including:
  - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
  - electrical measuring and testing procedures, including:
    - electrical resistance checks
    - open and short circuit tests
    - voltage drop tests
    - current flow tests
  - visual testing procedures, including:

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    - component moisture ingress
    - connector damage
- repair procedures for electrical circuits, including:
    - wire soldering procedures
    - terminal crimping procedures
    - replacing male and female terminals in a connector housing
    - connector removal and replacement procedures
    - basic electrical components removal and replacement procedures
- post-repair testing procedures, including:
    - confirming that electrical system is operating to manufacturer specifications
    - confirming that no other problems are present as a result of the repair.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the basic electrical circuits they have tested and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer electrical system specifications
- vehicle or machinery with faults in the basic electrical circuits specified in the performance evidence
- electrical test equipment to test basic electrical circuits and components
- consumable materials relevant to repairing basic electrical circuits and components, including connectors, terminals, wire, electrical tape and heat shrink sleeving
- electrical repair tools, equipment and materials relating to basic electrical circuits and components.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR013 Inspect, test and service charging systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, test and service vehicle, vessel and machinery charging systems. It involves preparing for the task, inspecting charging systems, servicing the systems, and completing workplace processes and documentation, including any associated recommendations for further action.

It applies to those working in the automotive service and repair industry. The charging systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, motorcycles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect, test and service charging system	1.1 Job requirements are determined according to workplace instructions 1.2 Inspection, testing and servicing procedures are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are reported 1.4 Tools and equipment, including multimeter, are selected and checked for serviceability
2. Inspect and test system	2.1 System is inspected and tested according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Charging circuit is tested according to workplace procedures and without causing damage to components or systems 2.3 Inspection results are compared with manufacturer specifications 2.4 Inspection findings are reported according to workplace procedures, including recommendations for required repairs or adjustments
3. Service system	3.1 System is serviced according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.3 Post-service testing is carried out to confirm charging system is operating to manufacturer specifications and that no other problems are present
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recycle material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate charging system information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking charging system service procedures and specifications.
Writing skills to:	• legibly and accurately complete workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions and report inspection findings to appropriate personnel.
Numeracy skills to:	• measure system output and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Technology skills to:	• use specialised tools and equipment, including multimeters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
	  • working safely with high current electrical systems.

Environmental requirements must include:	• procedures:
	  • found in safety data sheets (SDS) relating to toxic and corrosive substances
	  • for recycling and disposing of replaced charging system components.

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Unit Mapping Information

Equivalent to AURETR2013 Inspect and service charging systems

Links

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Assessment Requirements for AURETR013 Inspect, test and service charging systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, test and service the charging systems of three different vehicles, vessels or machinery, in which the work must involve checking:
  - system output
  - system control circuit
  - system wiring.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, testing and servicing charging systems, including procedures for:
  - selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
  - working safely with high current electrical systems
- environmental requirements, including procedures:
  - found in safety data sheets (SDS) relating to toxic and corrosive substances
  - for recycling and disposing of replaced charging system components
- identification and function of charging system components, including:
  - battery types, including:
    - lead acid and deep cycle batteries
    - maintenance-free batteries
  - generators

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  - alternators
- basic operating principles of charging systems, including:
  - using mechanical energy to produce electrical energy
  - charging battery and supplying power demands of vehicle
- inspection procedures for charging systems, including visual, aural and functional assessments of:
  - component damage and wear
  - component corrosion
- testing procedures for charging systems, including:
  - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
  - measuring charging system output under load
- servicing procedures for charging systems, including:
  - changing and adjusting drive belts
  - cleaning and tightening terminals
  - checking gauges and warning devices for operation
- post-service testing procedures, including confirming that charging system is operating to manufacturer specifications.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the charging systems that they have inspected, tested and serviced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer charging system specifications
- PPE, including clothing, and eye and hand protection

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- three different vehicles, vessels or machinery with charging systems requiring servicing
- tools and equipment appropriate for inspecting, testing and servicing charging systems, including multimeter.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR014 Inspect, test and service starting systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, test and service vehicle, vessel and machinery starting systems. It involves preparing for the task, inspecting starting systems, servicing the systems, and completing workplace processes and documentation, including any associated recommendations for further action.

It applies to those working in the automotive service and repair industry. The starting systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, motorcycles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect, test and service starting system	1.1 Job requirements are determined according to workplace instructions 1.2 Inspection, testing and servicing procedures are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are reported 1.4 ***Tools and equipment*** are selected and checked for serviceability
2. Inspect and test system	2.1 System and battery are inspected and tested according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Starting circuit is tested according to workplace procedures and without causing damage to components or systems 2.3 Inspection results are compared with manufacturer specifications 2.4 Inspection findings are reported according to workplace procedures, including recommendations for required repairs or adjustments
3. Service system	3.1 System is serviced according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.2 Post-service testing is carried out to confirm starting system is operating to manufacturer specifications and that no other problems are present
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recycle material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate starting system information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking starting system service procedures and specifications.
Writing skills to:	• legibly and accurately complete workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions and report inspection findings to appropriate personnel.
Numeracy skills to:	• match starting system types and identification numbers to workplace instructions and manufacturer specifications • compare battery cold cranking amps (CCA) with vehicle starting system specifications.
Technology skills to:	• use specialised tools and equipment, including load testers, inductive ammeters and multimeters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include:	• electronic testing equipment, including:
	  • multimeter
	  • load tester
	  • inductive ammeter.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
	  • working safely with high current electrical systems.

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Environmental requirements must include:	• procedures:
	  • found in safety data sheets (SDS) relating to toxic and corrosive substances
	  • for recycling and disposing of replaced starting system components.

Unit Mapping Information

Equivalent to AURETR2014 Inspect and service starting systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR014 Inspect, test and service starting systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, test and service three different vehicle, vessel or machinery starting systems, in which the work must involve checking:
  - starter motor and solenoid
  - ignition switch to starter control circuit
  - battery to starter motor wiring.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, testing and servicing starting systems, including procedures for:
  - selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
  - working safely with high current electrical systems
- environmental requirements, including procedures:
  - found in safety data sheets (SDS) relating to toxic and corrosive substances
  - for recycling and disposing of replaced starting system components
- identification and function of starting system components, including:
  - starter motor
  - starter solenoid
  - starter control circuits, including:
    - key ignition

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    - push button start
    - proximity transponder
    - automatic stop and start systems
    - immobiliser
    - interlocks
- basic operating principles of starting systems, including:
    - changing electrical energy to mechanical energy
    - mechanical advantage between ring gear and flywheel
    - basic circuit operation
- inspection procedures for starting systems, including visual, aural and functional assessments of:
    - component damage and wear
    - component corrosion
- testing procedures for starting systems, including:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - measuring starting system current draw
- servicing procedures for starting systems, including cleaning and tightening terminals
- post-service testing procedures, including confirming that starting system is operating to manufacturer specifications.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the starting systems that they have inspected, tested and serviced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- manufacturer starting system specifications
- PPE, including clothing, and eye and hand protection
- three different vehicles, vessels or machinery with starting systems requiring servicing
- tools and equipment appropriate for inspecting, testing and servicing starting systems, including load tester, inductive ammeter and multimeter.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR016 Read and apply vehicle wiring schematics and drawings

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to read and apply technical information in the wiring schematics and drawings of vehicles, vessels and machinery when testing and fault finding electrical wiring systems. It involves preparing for the task, reading and interpreting the schematics and drawings, and completing work processes.

It applies to those working in the automotive service and repair industry. The wiring schematics and diagrams include those in electrical systems in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to read and apply vehicle wiring schematics and drawings	1.1 Workplace instructions are used to determine job requirements 1.2 Wiring schematics and drawings are sourced that relate to the vehicle, vessel or machinery electrical system being tested 1.3 Schematics and drawings are checked to ensure they are current and include latest amendments
2. Interpret information	2.1 ***Electrical circuit information*** in schematics and drawings is correctly identified 2.2 Information is interpreted and applied to assist when carrying out testing and repair procedures on electrical wiring systems
3. Complete work processes	3.1 Schematics and drawings are stored to ensure ease of access and protection from loss or damage 3.2 Damage to schematics and drawings is reported according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret symbols and graphical illustrations in electrical wiring schematics and drawings.
Oral communication skills to:	• clarify information.
Numeracy skills to:	• interpret numbers and units relating to electrical circuits and wiring systems in automotive workshop hard copy and online documentation • determine correct measurement relationships for voltage, current and resistance in electrical circuits from wiring schematics and drawings • interpret correct wiring gauge and dimensions from wiring

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Skills	Description
	schematics and drawings.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Electrical circuit information must include:	• symbols • wiring codes • legends • diagrammatic representations.

Unit Mapping Information

Equivalent to AURETR2016 Read and apply vehicle wiring schematics and drawings

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR016 Read and apply vehicle wiring schematics and drawings

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- read, interpret and apply information from three different vehicle, vessel or machinery wiring schematics and diagrams when testing and fault finding their electrical wiring systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- types of information in wiring schematics and drawings, including:
  - circuit symbols
  - wiring codes
  - vehicle zone tables
  - legends
  - diagrammatic representations
- key components of wiring schematics and drawings, including:
  - vehicle wiring schematics
  - electrical component symbols
  - electrical operational block schematics
  - controller area network databus (CAN-bus) circuit diagrams
  - vehicle zoning information tables
  - electrical component drawings
  - connector drawings that include connector end view drawings
- procedures for identifying currency and version control of wiring schematics and drawings

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- procedures for maintaining wiring schematics and drawings.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle or machinery wiring schematics and drawings they have interpreted, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- wiring schematics and drawings relating to three different vehicles, vessels or machinery.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR017 Overhaul charging system alternators

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return charging system alternators to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the transmission, carrying out the overhaul process, reassembling and testing the transmission, and completing workplace processes and documentation.

It applies to those working in an automotive service and repair industry. The charging system alternators include those fitted to agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle alternator	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate alternator and components	2.1 Alternator is dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to alternator 2.2 Alternator components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble alternator and components	4.1 Alternator is assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of alternator is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace procedures and safety and environmental requirements, and any

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and alternator is presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for charging system alternators efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking charging system alternator specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure charging system alternator components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

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Skills	Description
Technology skills to:	• use precision measuring equipment, such as vernier calipers and micrometers • use specialised charging system alternator overhaul equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using specialised tools and equipment
	  • using appropriate personal protective equipment (PPE)
	  • identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
	• environmental requirements, including procedures:
	  • found in safety data sheets (SDS) relating to toxic and corrosive substances
	  • for disposing of replaced alternator components.

Unit Mapping Information

Equivalent to AURETR3017 Overhaul charging system alternators

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR017 Overhaul charging system alternators

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul charging system alternators of two different vehicles, vessels or machinery, which include an alternator with a:
  - star connected stator
  - delta connected stator.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling charging system alternators, including procedures for:
  - using specialised tools and equipment
  - using appropriate personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
- environmental requirements, including procedures:
  - found in safety data sheets (SDS) relating to toxic and corrosive substances
  - for disposing of replaced alternator components
- types, characteristics and operating principles of charging system alternators, including alternators with both star and delta connected stators
- charging system alternator overhaul procedures, including:
  - methods for cleaning and preparing charging system alternators for overhaul
  - charging system alternator dismantling procedures
  - charging system alternator repair and adjustment procedures, including:

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    - brushes to slip ring alignment
    - bearings shimmed and seated in alternator housing
    - rotors rebalanced
    - rectifier installation to alternator housing
  - component assembly procedures, including procedures for measuring and calculating tolerances, and adjusting components
- post-overhaul bench testing procedures, including:
  - use of load simulator load tester for complete system analysis
  - analysis of system operation while using gauges, current clamps, electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment
- post-overhaul testing procedures of alternator in vehicle, vessel or machinery, including:
  - accessing and interpreting diagnostic trouble codes (DTCs)
  - DTC clearing procedures
  - checking for electrical connector mating
  - checking for correct charging voltage at battery.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the charging system alternators that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications relating to charging system alternators
- two different vehicles, vessels or machinery with star and delta connected stators and requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting a range of alternators.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR018 Overhaul starting system motors

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return starting system motors to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the transmission, carrying out the overhaul process, reassembling and testing the transmission, and completing workplace processes and documentation.

It applies to those working in an automotive service and repair industry. The starting system motors include those fitted to agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle starter motor	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate starter motor and components	2.1 Starter motor is dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble starter motor and components	4.1 Starter motor is assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of starter motor is completed within workplace timeframes and without causing damage to other components or systems

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	4.4 Post-assembly testing is carried out according to workplace procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and starter motor is presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information relevant to starting system motor efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking starting system motor specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure starting system motor components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer

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Skills	Description
	specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers and micrometers • use specialised starting system motor overhaul equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using specialised tools and equipment
	  • using appropriate personal protective equipment (PPE)
	  • identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
	• environmental requirements, including procedures:
	  • found in safety data sheets (SDS) relating to toxic and corrosive substances
	  • for disposing of replaced components.

Unit Mapping Information

Equivalent to AURETR3018 Overhaul starting motors

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR018 Overhaul starting system motors

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul the starting system motors of three different vehicles, vessels or machinery, which must include:
  - one direct drive starter motor
  - one of the following solenoid pre-engaged types of starter motors:
    - direct drive
    - reduction drive
  - one stop-start starter motor.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling starting system motor, including procedures for:
  - using specialised tools and equipment
  - using appropriate personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
- environmental requirements, including procedures:
  - found in safety data sheets (SDS) relating to toxic and corrosive substances
  - for disposing of replaced components
- types, characteristics and operating principles of vehicle, vessel or machinery starting system motors, including starter motors that are direct drive and solenoid pre-engaged types

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- starting system overhaul procedures, including:
  - methods for cleaning and preparing starting system motors for overhaul
  - starting system motor dismantling procedures
  - starting system motor inspection, measuring and evaluation procedures, including methods for measuring and calculating tolerances and clearances
  - starting system motor repair and adjustment procedures, including:
    - brushes to commutator alignment
    - motor drive shaft to planetary gear assembly
    - solenoid shift lever to clutch drive assembly
  - procedures for tolerance measuring and calculating and adjusting components
- post-overhaul bench testing procedures, including:
  - use of load simulator load tester for complete system analysis
  - analysis of system operation while using gauges, current clamps, electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment
- post-overhaul testing procedures of starting system motors in vehicles, vessels or machinery, including:
  - accessing and interpreting diagnostic trouble codes (DTCs)
  - DTC clearing procedures
  - checking for electrical connector mating
  - checking for voltage drop and starting system motor correct current draw.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the starting system motors that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- workplace instructions
- manufacturer starting system motor specifications
- three different vehicles, vessels or machinery with the starting system components specified in the performance evidence and requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting a range of starting system motors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR019 Inspect, service and repair AC electric motor drive systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, service and repair alternating current (AC) electric motor drive systems in vehicles, vessels or machinery. It involves preparing for the task, inspecting AC electric motor drive systems, repairing the systems, and completing workplace processes and documentation, including associated recommendations for further action.

It applies to those working in the automotive service and repair industry. The AC electric motor drive systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect, service and repair AC electric motor drive system	1.1 Job requirements are determined according to workplace instructions 1.2 Inspection and servicing procedures are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect and test system	2.1 System is inspected and tested according to workplace procedures and ***safety requirements*** 2.2 Circuits are tested according to workplace procedures and without causing damage to components or systems 2.3 Inspection results are compared with manufacturer specifications 2.4 Inspection findings are reported according to workplace procedures, including recommendations for required repairs or adjustments
3. Service and repair system	3.1 System is serviced and repaired according to manufacturer and component specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 System is performance tested and final adjustments are made 3.3 Post-repair testing is carried out to confirm system is operating to manufacturer specifications, any reported problems are resolved, and no other problems are present
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and diagrams from manufacturer specifications and workplace procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions and report inspection findings to appropriate personnel.
Numeracy skills to:	• interpret vehicle electrical measurements and readings on digital and analogue gauges • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Technology skills to:	• use specialised tools and electrical test equipment to inspect, service and repair AC electric motor drive systems, including multimeters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
	  • working safely with high current electrical systems.

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Unit Mapping Information

Equivalent to AURETR3019 Inspect, service and repair AC electric motor drive systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR019 Inspect, service and repair AC electric motor drive systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, service and repair three of the following alternating current (AC) electric motor drive systems in different vehicles, vessels or machinery:
  - AC single phase induction motor
  - AC three phase induction motor
  - AC brush commutator motor
  - AC synchronous motor.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, servicing and repairing AC electric motor drive systems, including procedures for:
  - selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
  - working safely with high current electrical systems
- operating principles of AC electric motor drive systems, including of:
  - AC single phase induction motor
  - AC three phase induction motor
  - AC brush commutator motor
  - AC synchronous motor
- application, purpose and operation of AC electric motor drive systems, including:
  - forklifts

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    - golf karts and buggies
    - electric vehicle transportation
    - recreational vehicles, including quad bikes and motorcycles
- inspection procedures for AC electric motor drive systems, including for analysing system operation
- procedures for testing AC electric motor drive systems, including:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - procedures for using and operating electrical test equipment, including:
        - digital multimeters
        - test lights and probes
        - oscilloscopes
- service and repair procedures for AC electric motor drive systems, including:
    - component removal and replacement procedures
    - component and associated system adjustment procedures
- post-repair testing procedures for AC electric motor drive systems, including:
    - confirming that system is operating to manufacturer specifications
    - confirming that no other problems are present as a result of the repair.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the AC electric motor drive systems that they have inspected, serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer AC electric drive motor specifications

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- PPE, including clothing, and eye and hand protection
- three different vehicles, vessels or machinery with the AC electric motor drive systems specified in the performance evidence requiring repair
- tools, equipment and materials appropriate for inspecting, servicing and repairing AC electric motor drive systems, including multimeter.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR020 Diagnose and repair network electronic control systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair vehicle or machinery embedded network electronic control systems. These systems include two-wire high and low speed (CAN-bus) and single wire low speed (LIN-bus) networked circuits essential to control engine powertrain, vehicle dynamic control functions and body control functions. They include vehicle infotainment and climate control systems. The unit involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. Embedded networked systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes**.**	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair network electronic control system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose network electronic control system	2.1 Diagnostic tests are carried out according to workplace procedures and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for necessary repairs or adjustments are reported according to workplace procedures
3. Repair network electronic control system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• identify and locate various sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match electrical components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications • interpret vehicle electrical measurements and readings • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised equipment, including multimeters, scan tools and oscilloscope.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with:

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	• working on vehicle high voltage ignition systems • wearing jewellery while working around high current wiring systems.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR020 Diagnose and repair network electronic control systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in three different network electronic control circuits that set network communication diagnostic trouble codes (DTCs), including one single wire circuit and one two-wire circuit.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing network electronic control systems, including procedures for identifying hazards and controlling risks associated with:
  - working on vehicle high voltage ignition systems
  - wearing jewellery while working around high current wiring systems
- operating principles of network electronic control systems and associated components, including:
  - assurance of message delivery, non-conflicting messages, minimum time of delivery, and electromagnetic field (EMF) noise resilience
  - network topographies
  - network protocols, including characteristics and data speeds
- application, purpose and operation of network electronic control systems and components, including:
  - controlled area network (CAN), including:
    - nodes: host processor, CAN controller, and transceiver
    - gateway modules

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    - terminating resistors
    - data transmission
    - vehicle data logic connector (DLC)
  - local interconnect network (LIN), including:
    - master and slaves
    - data transmission
- diagnostic testing procedures for network electronic control systems, including:
  - accessing and interpreting scan tool system data, including:
    - DTCs, including ‘U’ type communication codes
    - live data
    - freeze frame data
    - waveforms
  - using diagnostic flow charts
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - determining damage to system wiring and connectors
- repair procedures for network electronic control systems, including:
  - connector removal and replacement procedures
  - removal and replacement procedures for vehicle network electronic control system components
- post-repair testing procedures for network electronic control systems, including:
  - DTC clearing procedures
  - checking for electrical connector mating.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the network electronic control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for network electronic control systems
- two different network electronic control circuits
- diagnostic equipment for network electronic control circuits, including:
  - multimeter
  - scan tool
  - oscilloscope
- tools, equipment and materials appropriate for repairing network electronic control circuits.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR021 Inspect, service and repair electronic management, monitoring and tracking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, service and repair electronic monitoring, management and tracking systems fitted to heavy vehicles or machinery. It involves preparing for the task, inspecting the systems, repairing the systems, and completing workplace processes and documentation, including any associated recommendations for further action.

It applies to those working in the automotive service and repair industry. The electronic management, monitoring and tracking systems include those in heavy vehicles, agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect, service and repair electronic management, monitoring and tracking system	1.1 Job requirements are determined according to workplace instructions 1.2 Inspection, servicing and repair procedures are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and electrical test equipment are selected and checked for serviceability
2. Inspect and test system	2.1 System is inspected and tested according to workplace procedures and ***safety requirements*** 2.2 Circuits are tested according to workplace procedures and without causing damage to components or systems 2.3 Inspection results are compared with manufacturer specifications 2.4 Inspection findings are reported according to workplace procedures, including recommendations for required repairs or adjustments
3. Service and repair system	3.1 System is serviced and repaired according to manufacturer and component specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.2 System is performance tested and final adjustments are made 3.3 Post-repair testing is carried out to confirm system is operating to manufacturer specifications, any reported problems are resolved, and no other problems are present
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use with protective guards, safety features and cowlings in place 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and diagrams in manufacturer specifications and workplace procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions and report inspection findings to appropriate personnel.
Numeracy skills to:	• interpret vehicle electrical measurements and readings on digital and analogue gauges • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Technology skills to:	• use specialised tools and electrical test equipment, including scan tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
	  • working safely with high current electrical systems.

Environmental requirements must include:	• procedures:
	  • found in safety data sheets (SDS) relating to toxic and corrosive substances
	  • for recycling and disposing of replaced electronic management, monitoring and tracking system components.

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Unit Mapping Information

Equivalent to AURETR3021 Inspect, service and repair electronic management, monitoring and tracking systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR021 Inspect, service and repair electronic management, monitoring and tracking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, service and repair three of the following electronic management, monitoring and tracking systems:
  - receivers
  - displays
  - electronic controllers
  - steering actuators
  - telematics
  - connectors and harnesses.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, servicing and repairing electronic management, monitoring and tracking systems, including procedures for:
  - using personal protective equipment (PPE), including clothing, and eye and hand protection
  - working safely with high current electrical systems
- environmental requirements, including procedures:
  - found in safety data sheets (SDS) relating to toxic and corrosive substances
  - for recycling and disposing of replaced electronic management, monitoring and tracking system components

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- operating principles of electronic management, monitoring and tracking systems, including:
  - system overview
  - global positioning system (GPS)
  - electronic sensors and processors
  - electrical actuators
- application, purpose and operation of electronic management, monitoring and tracking systems, including:
  - receivers
  - displays
  - electronic controllers
  - steering actuators
  - telematics
  - connectors and harnesses
- techniques for reading and interpreting automotive technical information, graphic symbols and wiring diagrams
- inspection procedures, including:
  - analysing system operation
  - identifying software versions
  - interrogating electronic fault codes
- testing electrical systems, including procedures for accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
- service and repair procedures, including:
  - component removal and replacement procedures
  - downloading and installing relevant component software
  - component and associated system adjustment procedures to include variable operating conditions
- post-repair testing procedures, including:
  - confirming that vehicle or machinery electronic monitoring, management and tracking systems are serviceable and operating to manufacturer specifications
  - confirming that no other problems are present as a result of the repair.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electronic management, monitoring and tracking system that they have inspected, serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for electronic management, monitoring and tracking systems
- PPE, including clothing, and eye and hand protection
- vehicles or machinery with the electronic management, monitoring and tracking systems specified in the performance evidence requiring service or repair
- tools, equipment and materials appropriate for inspecting, servicing and repairing electronic management, monitoring and tracking systems, including scan tool.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR022 Diagnose and repair vehicle dynamic control systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in dynamic control systems of vehicles. These systems include the functions of a vehicle electronic braking control module (EBCM), such as anti-lock braking, brake assist, descent control, electronic brake force distribution, electronic park brake, hill start assist, stability control, traction control and active roll-over protection. The unit involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in an automotive service and repair industry. Vehicle dynamic control systems include those in heavy commercial vehicles, light vehicles or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
1. Prepare to diagnose and repair vehicle dynamic control system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose vehicle dynamic control system	2.1 Diagnostic tests are carried out according to workplace procedures and ***safety requirements*** without causing damage to components or systems 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnostic tools and equipment are selected and checked for serviceability according to manufacturer specifications and workplace procedures
3. Repair vehicle dynamic control system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked according to manufacturer specifications and workplace procedures 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
	4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify and locate various sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in diagnostic and repair information from manufacturer specifications and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret vehicle electrical measurements and readings • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised equipment, including multimeters and scan tools.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • using specialised tools and equipment • using appropriate personal protective equipment (PPE) • identifying hazards and controlling risks associated with: • working on vehicle high voltage ignition systems • wearing jewellery while working around high current wiring systems.

Unit Mapping Information

Equivalent to AURETR3022 Diagnose and repair vehicle dynamic control systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR022 Diagnose and repair vehicle dynamic control systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in the dynamic control systems of:
  - one vehicle or machinery with an anti-lock braking system (ABS)
  - one vehicle or machinery with a traction control system (TCS).

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing vehicle dynamic control systems, including procedures for:
  - using specialised tools and equipment
  - using appropriate personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with:
    - working on vehicle high voltage ignition systems
    - wearing jewellery while working around high current wiring systems
- operating principles of vehicle dynamic control systems and associated components, including:
  - active roll-over protection
  - anti-lock braking
  - brake assist
  - descent control
  - electronic brake force distribution

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  - electronic park brake
  - hill start assist
  - stability control
  - traction control
- application, purpose and operation of vehicle dynamic control systems and components, including:
  - ABS, including system inputs, electronic control unit (ECU), ABS modulator, and system outputs
  - TCS, including system inputs, ECU, and system outputs, including associated throttle and braking system controls
  - electronic stability control (ESC), including system inputs, including yaw and steering angle sensors, and ECU and system outputs, including associated throttle and braking system controls
- diagnostic testing procedures for vehicle dynamic control systems, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including 'U' type communication codes
    - live data
    - freeze frame data
    - waveforms
  - using diagnostic flow charts
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - determining damage to system wiring and connectors
- repair procedures for vehicle dynamic control systems, including:
  - connector removal and replacement procedures
  - removal and replacement procedures for vehicle dynamic control system components
- post-repair testing procedures for vehicle dynamic control systems, including:
  - DTC clearing procedures
  - checking for electrical connector mating.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle dynamic control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer vehicle dynamic control system specifications
- two different vehicles or machinery with dynamic control system faults
- diagnostic equipment for vehicle dynamic control systems, including:
  - multimeter
  - scan tool
- tools, equipment and materials appropriate for repairing vehicle dynamic control systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR024 Diagnose and repair compression ignition engine management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the electronic compression ignition engine management systems of vehicles or machinery. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in an automotive service and repair industry. Compression ignition engine management systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair compression ignition engine management system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose compression ignition engine management system	2.1 Diagnostic tests are carried out according to workplace procedures and ***safety requirements*** without causing damage to components or systems 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for necessary repairs or adjustments are reported according to workplace procedures
3. Repair compression ignition engine management system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer and component specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle and machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• identify and locate various sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in information relating to compression ignition engine management systems from manufacturer specifications and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• interpret numerical outputs on multimeters and scan tools • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised equipment, including multimeters and scan tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with: • working with high pressure diesel fuel systems

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	• wearing jewellery while working around high current wiring systems.

Unit Mapping Information

Equivalent to AURETR3024 Diagnose and repair electronic compression ignition engine management systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR024 Diagnose and repair compression ignition engine management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in the compression ignition engine management systems of three different vehicles or machinery, including:
  - faults in two of the following:
    - engine position sensor
    - throttle position sensor
    - engine coolant temperature sensor
    - engine mass airflow (MAF) sensor
    - inlet air temperature (IAT) sensor
- faults in one of the following:
    - fuel injector
    - engine fuel pressure sensor
    - boost pressure sensor
    - low pressure fuel delivery pump
    - high pressure fuel rail pump
    - electronic control unit (ECU).

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing compression ignition engine management systems, including procedures for identifying hazards and controlling risks associated with:

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  - working with high pressure diesel fuel systems
  - wearing jewellery while working around high current wiring systems
- operating principles of diesel fuel injection systems and associated components, including:
  - phases of combustion
  - composition of diesel fuel, including cetane and sulphur content
- application, purpose and operation of compression ignition engine management systems and components, including common rail fuel systems:
  - low pressure stage
  - high pressure stage, including:
    - high pressure injection pump
    - common fuel rail
    - injectors
    - high pressure fuel line
  - compression ignition engine management systems, including:
    - sensors
    - actuators
    - wiring harness
    - electronic control module (ECM)
    - associated vehicle systems
- diagnostic testing procedures for compression ignition engine management systems, including:
  - diagnostic flow charts
  - fuel system testing, including:
    - low pressure fuel system testing
    - high pressure fuel system testing
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors or wiring
    - injector testing
    - sensor testing
    - actuator testing
  - accessing and interpreting industry-relevant test equipment data, including:
    - fault codes
    - live data
    - freeze frame data
    - waveforms
- repair or replacement procedures for compression ignition engine management systems, including procedures for:
    - removing and replacing sensors
    - removing and replacing actuators, including fuel injectors and fuel pumps

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    - adjusting and recalibrating components and their associated systems
- post-repair testing procedures, including procedures for:
  - clearing fault codes
  - assessing engine performance
  - checking for electrical connector mating.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the compression ignition engine management systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for compression ignition engine management systems
- three different vehicles or machinery with compression ignition engine management system faults
- diagnostic equipment for compression ignition engine management systems, including:
  - multimeter
  - scan tool
- tools, equipment and materials appropriate for repairing compression ignition engine management systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR025 Test, charge and replace batteries and jump-start vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to test, charge, replace, retest and secure a range of automotive batteries, including vehicle or machinery jump-starting procedures. It involves preparing for the task, inspecting and testing the battery to determine serviceability, charging, jump-starting, removing and replacing, and undertaking the final retesting of batteries, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The batteries include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, motorcycles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to test, charge and replace batteries and jump-start vehicle	1.1 Job requirements are determined according to workplace instructions 1.2 Technical information for testing batteries and equipment safe operating procedures are accessed and interpreted from vehicle or machinery and battery manufacturer specifications 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Tools, equipment and materials*** are selected and checked for serviceability
2. Test battery and determine serviceability	2.1 Battery is inspected and tested according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Battery cables, terminals and case are visually inspected to determine faults or damage 2.3 Electrolyte levels are checked and topped up as required 2.4 Battery and terminals are cleaned using correct equipment and battery cleaning materials 2.5 Battery voltage and load are checked to determine if battery requires charging, jump-starting or replacement
3. Charge battery	3.1 Technical information for charging is interpreted from vehicle or machinery and battery manufacturer specifications 3.2 Tools and equipment for charging battery are identified, selected and prepared according to manufacturer specifications and workplace procedures 3.3 Electrolyte levels are checked and topped up as required 3.4 ***Battery charge rate is determined*** and battery charger is connected to battery according to manufacturer specifications, workplace procedures and safety requirements 3.5 Battery is charged according to manufacturer specifications, workplace procedures and safety requirements 3.6 Battery charger is turned off and disconnected, and electrolyte levels are rechecked, according to manufacturer specifications, workplace procedures and safety requirements as required
4. Carry out jump-start procedures	4.1 Jump-start is carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to vehicle or machinery 4.2 Battery voltage is identified and confirmed as being appropriate

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	to jump-start procedures and vehicle or machinery 4.3 Leads are connected and disconnected in correct sequence and polarity according to manufacturer specifications, workplace procedures and safety requirements
5. Remove and replace battery	5.1 Appropriate power source memory back-up device is connected to ensure no loss of power to accessories as required 5.2 Battery terminals are disconnected according to manufacturer specifications, workplace procedures and safety requirements 5.3 Battery is removed from vehicle according to manufacturer specifications, workplace procedures and safety requirements 5.4 ***Replacement battery is chosen*** appropriate to electrical and physical specifications and measurements of vehicle or machinery 5.5 Battery is replaced and secured according to manufacturer specifications, workplace procedures and safety requirements 5.6 Battery terminals are reconnected and tightened according to manufacturer specifications, workplace procedures and safety requirements 5.7 Post-replacement testing is carried out to confirm battery charging system is operating to manufacturer specifications, any reported problems are resolved, and no other problems are present
6. Complete work processes	6.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 6.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recycled material is collected 6.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 6.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret safety data sheets (SDS), and safe operating procedures in manufacturer specifications and workplace procedures • interpret text, symbols and wiring diagrams in manufacturer specifications, and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions • report inspection findings and make recommendations.

Numeracy skills to:	• identify, interpret and match components and requirements to manufacturer specifications, including:
	  • battery types
	  • battery identification numbers and specifications
	  • cold cranking amp (CCA) and reserve capacity (RC) battery rating requirements
	• use mathematical formulas and operations to calculate correct charge rate and charging period for the type and capacity of battery.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised tools and equipment relating to testing, charging and replacing batteries and jump-starting vehicles correctly and safely, including battery chargers, hydrometers and jumper leads.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools, equipment and materials must include:	• load testing devices • hydrometers • multimeters • jumper leads • battery chargers

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	• battery cleaning materials.

Safety and environmental requirements must include:	• work **h**ealth and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • safely operating:
	  • battery testing equipment
	  • battery charging equipment
	  • selecting and using personal protective equipment (PPE), including safety glasses
	  • identifying hazards and controlling risks associated with:
	  • battery, vehicle and machinery movement before carrying out work
	  • wearing jewellery while working around high current wiring systems
	• environmental requirements, including procedures for:
	  • following SDS to trap, store and dispose of toxic and corrosive substances
	  • disposing of or recycling batteries.

Determining battery charge rate must include:	• calculating correct charge rate • calculating charging period for type and capacity of battery.

Choosing replacement battery must include:	• determining battery specifications to suit vehicle or machinery manufacturer specifications, including correct:
	  • voltage
	  • CCA and RC ratings.

Unit Mapping Information

Equivalent to AURETR3025 Test, charge and replace batteries

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR025 Test, charge and replace batteries and jump-start vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- test two different types of automotive batteries
- charge two batteries, in which the work must involve:
  - slow or trickle charging one battery
  - rapid charging the second battery
- remove and replace batteries from two different vehicles or machinery
- jump-start two different vehicles or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to testing, charging and replacing batteries and jump-start vehicles, including procedures for:
  - safely operating:
    - battery testing equipment
    - battery charging equipment
  - selecting and using personal protective equipment (PPE), including safety glasses
  - identifying hazards and controlling risks associated with:
    - battery, vehicle and machinery movement before carrying out work
    - wearing jewellery while working around high current wiring systems
- environmental requirements, including procedures for:
  - following safety data sheets (SDS) to trap, store and dispose of toxic and corrosive substances

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  - disposing of or recycling batteries
- location and content of manufacturer specifications, workplace procedures, and SDS
- types, application and operation of batteries, including:
  - lead acid batteries, including deep cycle batteries
  - gel batteries
  - absorbed glass mat batteries
  - calcium batteries
  - lithium ion and lithium ion phosphate batteries
- battery connection methods for 6 volt, 12 volt, 24 volt and 48 volt, including:
  - series
  - parallel
  - series parallel
- battery classification methods, including:
  - cold cranking amps (CCA)
  - reserve capacity (RC)
  - amp hour rating
- battery testing procedures, including:
  - testing safety requirements
  - visual inspection procedures
  - voltage drop testing
  - hydrometer testing
  - high rate discharge testing
- battery charging procedures, including:
  - charging safety requirements
  - slow, fast and trickle charging
  - battery memory retention
- battery replacement procedures, including:
  - replacement safety requirements
  - terminal disconnection
  - battery selection
  - battery installation and terminal connection
  - securing battery in vehicle
  - system recalibration procedures
- battery jump-start procedures, including:
  - vehicle and personnel safety requirements
  - battery terminal disconnection
  - jumper lead connection and disconnection.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the batteries that they have tested, charged, replaced and jump-started, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer battery specifications
- PPE for testing, charging, removing and replacing batteries and jump-starting vehicles and machinery, including safety glasses
- two different types of serviceable batteries
- two different vehicles or machinery requiring jump-starting
- tools, equipment and materials appropriate for battery testing, charging and replacement, including:
  - load testing device
  - hydrometer
  - multimeter
  - jumper leads
  - battery charger
  - battery cleaning materials.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR026 Remove, replace and program electrical and electronic units and assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove, replace and program electrical and electronic units and assemblies integral to vehicle and machinery controller area network databus (CAN-bus). Electrical and electronic units and assemblies include powertrain control modules, engine and body control modules, and other electronic control modules that may require manufacturer programming procedures.

It applies to those working in the automotive service and repair industry. The electrical and electronic units and assemblies include those fitted to agricultural machinery, heavy commercial vehicles, light vehicles, vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove, replace and program electrical and electronic units and assemblies	1.1 Job requirements are determined from workplace instructions 1.2 Workplace procedures and manufacturer specifications are accessed and interpreted 1.3 Removal information is accessed and interpreted from manufacturer and component supplier specifications 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment are selected and checked for serviceability
2. Remove unit and assembly	2.1 Unit and assembly are removed using approved methods, tools and equipment and according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Unit and assembly are handled and stored according to manufacturer and component supplier requirements
3. Replace unit and assembly	3.1 Replacement information is accessed and interpreted from manufacturer and component supplier specifications 3.2 Unit and assembly are replaced using approved methods, tools and equipment and according to manufacturer specifications and workplace procedures
4. Program unit and assembly	4.1 Reprogramming options are analysed and those most appropriate are selected 4.2 Component replacement and programming procedures are carried out according to manufacturer and component supplier specifications 4.3 Post-replacement testing is carried out to confirm that unit and assembly are operating to manufacturer specifications and that no other problems are present
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and diagrams in manufacturer specifications, safe operating procedures and workplace information.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• match component part numbers to workplace instructions and vehicle and component part lists • interpret measurements of voltage, current and resistance relating to electrical and electronic units and assemblies • measure components to determine compliance with specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• determine cause of faults and select most appropriate diagnostic and reprogramming method.
Technology skills to:	• use specialised workplace technology, tools and equipment relating to removing, replacing and programming electrical and electronic units and assemblies, including scan tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems.

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Unit Mapping Information

Equivalent to AURETR3026 Remove, replace and program electrical and electronic units and assemblies

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR026 Remove, replace and program electrical and electronic units and assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- remove, replace, program and retest two of the following systems on controller area network databus (CAN-bus) circuits in different vehicles or machinery, including:
  - supplementary restraint system (SRS) module
  - body control module (BCM)
  - engine control module (ECM)
  - powertrain control module (PCM)
  - electric brake control (EBC), antilock braking system (ABS) or vehicle stability control (VSC) module
  - collision avoidance control (CAC) module
  - adaptive cruise control (ACC) module.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing, replacing and programming electrical and electronic units and assemblies, including procedures for identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
- key features of electrical and electronic units and assemblies integral to vehicle CAN-bus networks, including:
  - supplementary restraint system modules
  - body control modules
  - engine control modules

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  - powertrain control modules
  - electric brake control, antilock braking system, and vehicle stability control modules
  - collision avoidance control modules
  - adaptive cruise control modules
- various types of wiring systems found in vehicles, including:
  - basic wiring
  - twisted pair
  - shielded wiring
  - CAN-bus wiring
- procedures for removing and replacing electrical and electronic units and assemblies, including:
  - identifying unit position using wiring schematics and drawings
  - identifying unit model and configuration
  - identifying visual indications of unit damage, including:
    - physical damage and wear
    - water and moisture ingress
  - avoiding static electricity discharge when handling units
  - disconnecting and reconnecting electrical connectors
- procedures for programming electrical or electronic units, including:
  - service programming system (SPS)
  - original equipment manufacturer (OEM) programming code
  - flash code or program
  - vehicle configuration index (VCI) code or password
- post-replacement testing procedures, including checking unit system operation

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electrical and electronic units and assemblies they have removed, replaced and programmed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer electrical and electronic unit and assembly specifications
- two different vehicles or machinery requiring removal, replacement and programming of electrical and electronic units and assemblies
- tools, equipment and materials appropriate for removing, replacing and programming electrical and electronic units and assemblies, including scan tool.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR027 Install ancillary electronic systems and components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install and test ancillary electronic systems and components in vehicles or machinery. It involves preparing for the task, installing and testing the operation of the systems and components, and completing workplace processes and documentation. These electronic systems and components may require programming following installation to enable them to communicate with the vehicle or machinery controller area network data bus (CAN-bus or LIN-bus) topography.

It applies to those working in the automotive service and repair industry. Ancillary electronic systems and components include those being installed in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install ancillary electronic system and components	1.1 Job requirements are determined according to workplace instructions 1.2 Manufacturer specifications and installation fitting instructions are sourced and interpreted 1.3 Installation options are considered and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Install and test ancillary electronic system and components	2.1 Electronic system and components are checked for correct application and damage 2.2 Electronic equipment is installed according to manufacturer specifications, workplace procedures and ***safety requirements***, and without causing damage to components or systems 2.3 Programming code is sought and interpreted, as required, to enable installed equipment to communicate with vehicle or machinery controller area network 2.4 Installed system and components are tested for correct operation according to workplace procedures and manufacturer specifications 2.5 Post-installation testing of other electrical and electronic systems is carried out according to workplace procedures to confirm correct operation, and any problems detected as having been introduced during the installation process are rectified
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking specifications and procedures • interpret text, symbols and diagrams in ancillary electronic system and component fitment information in manufacturer specifications, and workplace procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting work performed and recording parts and material used.
Oral communication skills to:	• clarify instructions • report findings and make installation recommendations.
Numeracy skills to:	• match material and component part numbers to work instructions and vehicle and machinery component part lists • measure voltage, current and resistance, and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use workplace technology and specialist tools relating to the installation of ancillary electronic systems and components.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using specialised tools and equipment
	  • selecting and using appropriate personal protective equipment

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	(PPE)
	• identifying hazards and controlling risks associated with:
	  • working on high voltage ignition systems
	  • wearing jewellery while working around high current wiring systems.

Unit Mapping Information

Equivalent to AURETR3027 Install ancillary electronic control unit systems and components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR027 Install ancillary electronic systems and components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- install two ancillary electronic systems and components that require communication with the vehicle or machinery controller area network data bus (CAN-bus) topography of different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing ancillary electronic systems and components, including procedures for:
  - using specialised tools and equipment
  - selecting and using appropriate personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with:
    - working on high voltage ignition systems
    - wearing jewellery while working around high current wiring systems
- types and basic operation of common ancillary electronic systems and components, including:
  - driver interlocks, including alcohol interlock devices
  - remote keyless entry systems
  - security alarm systems
  - audio systems
  - mobile phones
  - speed alert systems

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  - navigation systems
  - reverse parking aids, including sensors, audible alerts and cameras
  - driver gauges and instruments
  - trailer harness connectors
- types of vehicle and machinery communication networks, including:
  - controller area network (CAN)
  - local interconnect network (LIN)
  - media oriented systems transport (MOST)
- types of communication network wiring, including:
  - single wire
  - two wire twisted pair
  - shielded wire
- procedures for installing basic ancillary electronic systems and components, including:
  - techniques for reading and interpreting technical information, wiring diagrams and graphic symbols
  - methods of determining wiring and connection type and size for system
  - methods of determining placement of components on vehicle or machinery
  - methods of connecting system and components to existing electrical system without causing damage or problems, including:
    - selecting and soldering wires
    - selecting and crimping terminals
    - removing and replacing connectors
    - removing and replacing existing electrical components
  - procedures for sourcing and using programming code to allow communication between installed system and existing vehicle or machinery systems
- post-installation testing procedures of basic ancillary electronic systems and components, including procedures for checking:
  - full operation of installed system
  - operation of existing electrical and electronic systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must be by direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the ancillary electronic systems and components that they have installed in vehicles or machinery, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive service and repair workplace or simulated workplace
- workplace instructions
- vehicle and machinery wiring specifications relevant to systems and components being installed
- manufacturer ancillary electronic system specifications
- two different vehicles or machinery requiring installation of ancillary electronic systems and components
- tools, equipment and materials appropriate for installing ancillary electronic systems and components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR028 Diagnose and repair instruments and warning systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the instruments and warning systems of vehicles, vessels or machinery. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in an automotive service and repair industry. The instruments and warning systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
1. Prepare to diagnose and repair instruments and warning system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose instruments and warning system	2.1 Diagnostic tests are performed according to workplace procedures and ***safety requirements*** without causing damage to components or systems 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for necessary repairs or adjustments are reported according to workplace procedures
3. Repair instruments and warning system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.2 Repair tools, equipment and materials are selected and checked according to manufacturer specifications and workplace procedures 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Compete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
	4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify and locate various sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in diagnostic and repair information from manufacturer specifications and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match instruments and warning system components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret electrical measurements and readings • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised equipment, including multimeters.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with high current wiring systems.

Unit Mapping Information

Equivalent to AURETR3028 Diagnose and repair instruments and warning systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR028 Diagnose and repair instruments and warning systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in the instruments and warning systems of two different vehicles, vessels or machinery, including faults in two of the following:
  - driver instrument warning gauge assembly
  - engine monitoring warning assembly
  - vehicle warning visual alert assembly
  - vehicle warning audible alert assembly
- remove, refit or replace an instrument panel in one vehicle, vessel or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing instruments and warning systems, including procedures for working with high current wiring systems
- operating principles of instruments and warning systems and associated components, including types of instruments, gauges and warning systems
- application, purpose and operation of instruments and warning systems and components, including:
  - instrument panel construction
  - panel illumination
  - magnetic and thermal gauges
  - voltage regulators
  - mechanical gauges

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  - digital electronic gauges and systems
  - warning lights and indicators
- diagnostic testing procedures for instruments and warning systems, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - freeze frame data
    - waveforms
  - using diagnostic flow charts
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - checking resistance, current flow and voltage instruments and warning systems
- repair procedures for instruments and warning systems, including:
  - tightening connections
  - replacing faulty or damaged cable connections
  - removing and replacing faulty or damaged components
- post-repair testing procedures for instruments and warning systems, including:
  - DTC clearing procedures
  - checking for electrical connector mating
  - undertaking static and dynamic performance tests of instruments and warning systems, including test-driving procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the instruments and warning systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer instrument and warning system specifications
- two different vehicles, vessels or machinery with instrument and warning system faults
- diagnostic equipment for instruments and warning systems, including multimeter
- tools, equipment and materials appropriate for repairing vehicle, vessel or machinery instruments and warning systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR032 Diagnose and repair automotive electrical systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the electrical systems of vehicles or machinery. These systems are single wire (non CAN-bus) networked circuits and include entry-exit locking systems, power windows, interior and exterior lighting, turning indicators, brake and hazard warning lights and electric drive motor circuits. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. Automotive electrical systems include those in agricultural machinery, heavy commercial vehicle, light vehicle, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair electrical system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose electrical system	2.1 Diagnostic tests are carried out according to workplace procedures and ***safety requirements*** without causing damage to components or systems 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for necessary repairs or adjustments are reported according to workplace procedures
3. Repair electrical system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Compete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• identify and locate various sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match electrical components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret vehicle electrical measurements and readings • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised equipment, including multimeters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must	• work health and safety (WHS) and occupational health and safety

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include:	(OHS) requirements, including procedures for:
	• using specialised tools and equipment
	• using appropriate personal protective equipment (PPE)
	• identifying hazards and controlling risks associated with:
	  • working on high voltage ignition systems
	  • wearing jewellery while working around high current wiring systems.

Unit Mapping Information

Equivalent to AURETR3032 Repair electrical systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR032 Diagnose and repair automotive electrical systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in three of the following electrical system single wire (non CAN-bus) circuits:
  - entry-exit locking systems with electric motor control circuit
  - power windows circuit
  - interior or exterior lighting circuit
  - turning indicator circuit
  - brake light circuit
  - hazard warning light circuit
  - electrical drive motor circuit
- carry out four of the following electrical connector repairs to a vehicle or machinery wiring harness:
  - crimp two different terminal types and sizes
  - remove two faulty connectors from the back of different terminals
  - solder two different wire gauges to electrical terminals
  - apply heat shrink insulation to two different crimped or soldered joints
  - check terminal retention on two different female terminals and connectors.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing automotive electrical systems, including procedures for:

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  - using specialised tools and equipment
  - using appropriate personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with:
    - working on high voltage ignition systems
    - wearing jewellery while working around high current wiring systems
- operating principles of automotive electrical systems and associated components, including:
  - current, voltage, resistance and power
  - series circuits
  - parallel circuits
  - series and parallel circuits
  - Ohm’s law
  - Faraday’s law
  - Kirchhoff's law
  - magnetism and direct current (DC) motor operation
  - electromagnetic interference and radiation
  - cable types and sizes and current carrying capacity
  - circuit protection devices
- application, purpose and operation of automotive electrical systems and components, including:
  - wiper motors
  - electric windows
  - electric door locks
  - fan motors
  - horns
  - lighting
  - radio aerials
- diagnostic testing procedures for automotive electrical systems, including:
  - visual, aural and functional assessments of electrical system components, including:
    - component damage and wear
    - component or connector corrosion
    - component water or moisture ingress
  - common faults in electrical circuits, including:
    - open circuits
    - high resistance circuits
    - short circuits
    - damaged insulation
    - frayed wires
    - burnt wiring
    - water and moisture ingress

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    - connector damage
    - terminal damage
  - using diagnostic flow charts
  - testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - checking resistance, current flow and voltage drop of system circuits
  - procedures for using:
    - digital multimeters
    - test lights and probes
    - oscilloscopes
- repair procedures for automotive electrical systems, including:
    - selecting and soldering wires
    - selecting and crimping terminals
    - removing and replacing connectors
    - removing and replacing electrical systems and their components
- post-repair testing procedures for automotive electrical systems, including:
  - checking for electrical connector mating
  - checking circuit current flow
  - static and dynamic performance tests of automotive electrical systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electrical systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- manufacturer automotive electrical system specifications
- three different vehicles or machinery with electrical system faults
- diagnostic equipment for electrical systems, including multimeter
- tools, equipment and materials appropriate for repairing automotive electrical systems, including:
  - automotive wiring
  - heat shrink
  - soldering iron.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR033 Develop and apply network electronic control system modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to develop, apply and validate significant modifications to existing network electronic control systems in order to vary or enhance performance. These systems include two-wire high and low speed (CAN-bus) and single wire low speed (LIN-bus) network circuits. The unit involves identifying the modification requirement, developing the modification specifications, applying and testing the modification, and completing workplace processes and documentation.

Significant and non-routine modifications are those that require compliance with Australian Design Rules and Vehicle Safety Bulletins.

It applies to those working in the automotive service and repair industry. The network electronic control systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the modification requirement	1.1 Job requirements are determined from workplace instructions 1.2 Reasons for the modification are identified and confirmed with appropriate persons 1.3 Modification options are identified and reported to appropriate persons according to workplace procedures 1.4 Hazards associated with the work are identified and risks are managed 1.5 Legal and safety impacts of the modification are considered, as required, according to regulatory requirements
2. Develop and validate the modification specification	2.1 Manufacturer specifications for the existing network electronic control systems are sourced and interpreted 2.2 Criteria for selecting the modification method and evaluating the outcomes are identified and documented 2.3 Proposed modification method is identified, selected and evaluated from available options 2.4 Selected option, including material choices and processes, is developed in detail and progressively assessed against established criteria 2.5 Modification specification is documented according to workplace procedures
3. Apply and test the modification specification	3.1 Tools, test equipment and materials required to support the modification procedure are identified, selected and prepared for use 3.2 Selected modification method is carried out according to workplace procedures and ***safety requirements*** 3.3 Post-modification testing is carried out according to workplace procedures to confirm modification outcomes are as intended, and any problems detected as having been introduced during the modification process are rectified 3.4 Test results and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.5 Variations needed during the modification process or as a result of testing are incorporated into the modification specification 3.6 Information and detail relating to the modification are documented and provided to the appropriate parties according to regulatory and commercial obligations

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate and evaluate appropriate sources of information.
Reading skills to:	• interpret the operating and testing procedures for network electronic control system testing equipment from workplace and manufacturer literature • research, organise and interpret technical information from manufacturer and workshop literature when seeking network electronic control system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting modification findings and recording parts and material used.
Oral communication skills to:	• clarify instructions, gain information from supervisors, and report modification outcomes.
Numeracy skills to:	• measure network electronic control system components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications • interpret precision measuring equipment and test equipment units and scales.

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Skills	Description
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised diagnostic equipment, including scan tools and oscilloscopes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
	  • using personal protective equipment (PPE) and hand tools.

Unit Mapping Information

Equivalent to AURETR5033 Develop and apply electronic systems modification

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR033 Develop and apply network electronic control system modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- develop and apply one of the following significant and non-routine modifications on the network electronic control system of two different vehicles, vessels, machinery or equipment:
  - adapt or modify network electronic control system to a significantly changed capability
  - adapt network electronic control system for different work conditions
  - modify or install a significant network electronic control system for a special purpose.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to developing and applying network electronic control system modifications, including procedures for:
  - identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
  - using personal protective equipment (PPE) and hand tools
- location and content of manufacturer specifications, workplace procedures and other relevant technical information relating to modifying network electronic control systems
- principles and processes involved in planning and implementing modifications to network electronic control systems
- types, functions, operation and limitations of the main automotive industry network electronic control systems being modified

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- types, functions, operation and limitations of diagnostic testing equipment required for network electronic control system modifications, including scan tools and oscilloscopes
- requirements of Australian Design Rules (ADRs) and Vehicle Safety Bulletins (VSBs) relating to network electronic control system modifications
- procedures for documenting and reporting the modification specifications and outcomes.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the network electronic control systems that they have modified, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive service repair workplace or simulated workplace
- workplace instructions
- manufacturer network electronic control system specifications
- ADRs and VSBs relating to network electronic control system modifications
- two different vehicles, vessels, machinery or equipment requiring network electronic control system modification
- diagnostic equipment for network electronic control system modification, including scan tools and oscilloscopes
- tools, equipment and materials appropriate for completing network electronic control system modifications.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR034 Develop and apply electrical system modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to develop, apply and validate significant modifications to existing electrical systems in order to vary or enhance performance. These systems are single wire (non CAN-bus) network circuits. The unit involves identifying the modification requirement, developing the modification specifications, applying and testing the modification, and completing workplace processes and documentation.

Significant and non-routine modifications are those that require compliance with Australian Design Rules and Vehicle Safety Bulletins.

It applies to those working in the automotive service and repair industry. The electrical systems include those of agricultural machinery, bicycles, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the modification requirement	1.1 Job requirements are determined from workplace instructions 1.2 Reasons for the modification are identified and confirmed with appropriate persons 1.3 Modification options are identified and reported to appropriate persons according to workplace procedures 1.4 Hazards associated with the work are identified and risks are managed 1.5 Legal and safety impacts of the modification are considered, as required, according to regulatory requirements
2. Develop and validate the modification specification	2.1 Manufacturer specifications for the existing electrical system are sourced and interpreted 2.2 Criteria for selecting the modification method and evaluating the outcomes are identified and documented 2.3 Proposed modification method is identified, selected and evaluated from available options 2.4 Selected option, including material choices and processes, is developed in detail and progressively assessed against established criteria 2.5 Modification specification is documented according to workplace procedures
3. Apply and test the modification specification	3.1 Tools, test equipment and materials required to support the modification procedure are identified, selected and prepared for use 3.2 Selected modification method is carried out according to workplace procedures and ***safety requirements*** 3.3 Post-modification testing is carried out according to workplace procedures to confirm modification outcomes are as intended, and any problems detected as having been introduced during the modification process are rectified 3.4 Test results and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.5 Variations needed during the modification process or as a result of testing are incorporated into the modification specification 3.6 Information and detail relating to the modification are documented and provided to the appropriate parties according to regulatory and commercial obligations
4. Complete work	4.1 Final inspection is made to ensure work is to workplace

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Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
processes	expectations 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate and evaluate appropriate sources of information.
Reading skills to:	• interpret the operating and testing procedures for electrical system testing equipment from workplace and manufacturer literature • research, organise and interpret technical information from manufacturer and workshop literature when seeking electrical system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting modification findings and recording parts and material used.
Oral communication skills to:	• clarify instructions, gain information from supervisors, and report modification outcomes.
Numeracy skills to:	• measure electrical system components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications • interpret precision measuring equipment and test equipment units and scales.
Planning and organising	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed

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Skills	Description
skills to:	within workplace timeframes.
Technology skills to:	• use measuring equipment, including micrometers • use specialised diagnostic equipment, including multimeters and scan tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • identifying hazards and controlling risks associated with:
	  • working on vehicle ignition systems with injector high voltages
	  • wearing jewellery while working around high current wiring systems
	  • using personal protective equipment (PPE) and hand tools.

Unit Mapping Information

Equivalent to AURETR5034 Develop and apply electrical systems modification

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR034 Develop and apply electrical system modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- develop and apply one of the following significant and non-routine modifications on the electrical system of two different vehicles, vessels, machinery or equipment:
  - adapt or modify electrical system to a significantly changed capability
  - adapt electrical system for different work conditions
  - modify or install a significant electrical system for a special purpose.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to developing and applying electrical system modifications, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working on vehicle ignition systems with injector high voltages
    - wearing jewellery while working around high current wiring systems
  - using personal protective equipment (PPE) and hand tools
- location and content of manufacturer specifications, workplace procedures and other relevant technical information relating to modifying electrical systems
- principles and processes involved in planning and implementing modifications to electrical systems
- types, functions, operation and limitations of the electrical systems being modified
- types, functions, operation and limitations of diagnostic testing equipment required for electrical system modifications, including scan tools and oscilloscopes

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- requirements of Australian Design Rules (ADRs) and Vehicle Safety Bulletins (VSBs) relating to electrical system modifications
- procedures for documenting and reporting the modification specifications and outcomes.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electrical systems that they have modified, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive service repair workplace or simulated workplace
- workplace instructions
- manufacturer electrical system specifications
- ADRs and VSBs relating to electrical system modifications
- two different vehicles, vessels, machinery or equipment requiring electrical system modification
- diagnostic equipment for electrical system modifications, including digital multimeters and scan tools
- tools, equipment and materials appropriate for completing electrical system modifications.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR037 Diagnose complex faults in light vehicle safety systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose complex faults in light vehicle or light commercial vehicle embedded network safety systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, choosing the diagnostic procedure and tools, applying the diagnostic procedure, reporting conclusions and making repair recommendations.

Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

It applies to those working in the automotive service and repair industry. The vehicle network safety systems include those of light vehicles or light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Nature and objective of diagnostic requirements are determined from workplace instructions 1.2 Existence of fault in vehicle safety system is confirmed from direct or indirect evidence 1.3 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety requirements***
2. Prepare to carry out diagnosis	2.1 Manufacturer specifications and other technical information for safety system are accessed and interpreted 2.2 Diagnostic procedures and options are identified 2.3 Diagnostic method sequence, tests and testing processes are selected from the range of available options 2.4 Testing equipment is selected and prepared according to manufacturer specifications and workplace procedures 2.5 Tools, equipment and materials required to support the diagnostic process are identified, selected and prepared for use
3. Apply diagnostic procedures	3.1 Selected diagnostic process is followed and testing is carried out according to manufacturer specifications, workplace procedures and safety requirements 3.2 Diagnostic findings are verified, as required, by using reliable alternative or optional process according to manufacturer specifications and workplace procedures 3.3 Conclusions are drawn from findings and documented according to workplace procedures, including recommendations for necessary repairs 3.4 Conclusions are provided to appropriate personnel or customer to confirm further action to be taken
4. Complete work processes	4.1 Vehicle is presented ready to be repaired or returned to the customer 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate and evaluate appropriate sources of information efficiently • apply diagnostic skills to different vehicles.
Reading skills to:	• research, organise and interpret technical information from manufacturer and workshop literature when seeking light vehicle safety system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, gain information from customers and supervisors, report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure safety system components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Technology skills to:	• use specialised diagnostic equipment, including:
	  • digital multimeters
	  • scan tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • identifying hazards and controlling risks associated with:

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	• working with high voltages on vehicle electrical systems • working around the vehicle's supplementary restraint systems (SRS), such as airbags • wearing jewellery while working around high electrical currents • disarming vehicle airbag and safety restraint systems, as required.

Unit Mapping Information

Equivalent to AURETR4037 Diagnose complex electrical and electronic faults in light vehicle safety systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR037 Diagnose complex faults in light vehicle safety systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose complex faults in the safety systems of two different light vehicles or light commercial vehicles
- the above diagnosis must involve two of the following types of complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing complex faults in light vehicle safety systems, including procedures for:
  - identifying hazards and controlling risks associated with:
    - working with high voltages on vehicle electrical systems
    - working around the vehicle's supplementary restraint systems (SRS), including airbags
    - wearing jewellery while working around high electrical currents
  - disarming vehicle airbag and safety restraint systems
- types of complex faults relating to light vehicle safety systems, including:
  - intermittent
  - multi-system

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    - introduced as a result of system repair
    - indirect, caused by the influence of external systems
- methods for locating and content of manufacturer specifications, workplace procedures and other technical information relating to light vehicle safety systems
- types, function and operation of light vehicle safety systems, including:
    - active and passive collision avoidance
    - adaptive front lighting systems
    - airbag systems
    - lane keeping assist
    - occupant detection systems
    - radar cruise control
    - roll-over protection
    - seatbelt pre-tensioners
- testing procedures for light vehicle safety systems, including:
    - using digital multimeter, scan tool and oscilloscope
    - vehicle dynamic and static testing
    - component failure analysis
    - vehicle continuous and non-continuous monitored systems
- types, functions, operation and limitations of diagnostic testing equipment required to diagnose complex faults in light vehicle safety systems
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
        - live data
        - freeze frame data
        - waveforms
- methods and processes for documenting and reporting diagnostic findings and recommendations.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle safety systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle safety system specifications
- two different light vehicles or light commercial vehicles with complex faults in their safety systems
- light vehicle safety system diagnostic equipment, including:
  - digital multimeter
  - scan tool
- tools, equipment and materials appropriate for diagnosing complex faults in light vehicle safety systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR042 Remove, refit and operate electrical components following body repair activities

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove, refit and test the operation of electrical components following body repair activities. Electrical components include headlights, tail-lights, mirrors, antennas, sensors, actuators, and vehicle, vessel or machinery control modules. These components are not an integral part of vehicle controller area network databus (CAN-bus) typography and do not require programming procedures following fitting activities.

It applies to those working in the automotive service and repair industry. The electrical components include those fitted in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove, refit and operate electrical components following body repair activities	1.1 Job requirements are determined from workplace instructions 1.2 Removal and refitting procedures and information are accessed and interpreted 1.3 Hazards are recognised and precautions are taken according to ***safety requirements*** 1.4 Tools and equipment are selected and checked for serviceability
2. Remove electrical components	2.1 Electrical components are removed using approved methods, tools and equipment and according to workplace procedures and safety requirements 2.2 Components are inspected for damage according to workplace procedures 2.3 Components are handled and stored according to manufacturer and component supplier requirements
3. Refit electrical components	3.1 Electrical components are replaced using approved methods, tools and equipment 3.2 Electrical components are refitted according to workplace procedures and safety requirements
4. Test operation of electrical components	4.1 Options for testing components are identified 4.2 Electrical components are tested according to workplace procedures and without causing damage to components or systems 4.3 Faults are identified from operational test results and potential causes of faults are analysed 4.4 Findings are reported according to workplace procedures, including recommendations for repair or component replacement
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked, stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and diagrams in manufacturer specifications, safe operating procedures and workplace information.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• match materials and component part numbers to workplace instructions, manufacturer specifications, and vehicle and component part lists • interpret measurements of voltage, current and resistance relating to electrical components • measure materials and components to determine compliance with specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE)
	  • identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems.

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Unit Mapping Information

Equivalent to AURETR2042 Remove, refit and test electrical componentry for operation following body repair activities

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR042 Remove, refit and operate electrical components following body repair activities

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- remove, refit and operationally test four of the following systems on non controller area network databus (CAN-bus) circuits on different vehicles, vessels or machinery:
  - headlight or tail-light assembly
  - windscreen washer and wiper motor assembly
  - external electric mirror assembly
  - antenna, mobile phone or radio
  - actuators, central door locking or window closure.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing, refitting and operating electrical components following body repair activities, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
- identification and function of electrical components, including:
  - headlight assemblies
  - tail-light assemblies
  - side and rear vision mirrors
  - windscreen washer and wiper motor assemblies
  - door and window motor assemblies

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- procedures for removing and replacing electrical components, including:
  - identifying component position using wiring schematics and drawings
  - identifying component model and configuration
  - identifying visual indications of control unit damage, including:
    - physical damage and wear
    - water and moisture ingress
  - removing and replacing trim and covers
  - handling precautions of electrical components, including halogen globes
  - disconnecting and reconnecting electrical connectors
  - fitting electrical components to vehicle, vessel or machinery body
- post-fitting testing procedures ***of electrical components***, including checking electrical system operation.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electrical components that they have removed, refitted and tested following body repair activities, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive body repair workshop or simulated workplace
- workplace instructions
- vehicles, vessels or machinery with the electrical components specified in the performance evidence requiring removal and refitting following body repair
- tools and equipment appropriate for removing and refitting electrical components following body repair activities.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR043 Diagnose and repair electronic body management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the electronic body management systems of vehicles, vessels or machinery. These systems include two-wire high and low speed (CAN-bus) and single wire low speed (LIN-bus) networked circuits in the vehicle or machinery's embedded network electronic control system and are essential to controlling vehicle, vessel or machinery body control functions, including passenger convenience, comfort, navigation and infotainment systems. The unit involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in an automotive service and repair industry. Electronic body management embedded networked systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair electronic body management system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose electronic body management system	2.1 Diagnostic tests are carried out according to workplace procedures and ***safety requirements*** without causing damage to components or systems 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for necessary repairs or adjustments are reported according to workplace procedures
3. Repair electronic body management system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• identify and locate various sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams in diagnostic and repair information from manufacturer specifications and workplace instructions and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match electronic body control components and part identification numbers to workplace instructions, vehicle and component part lists, and manufacturer specifications • interpret electrical measurements and readings • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised equipment, including multimeters and scan tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:

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	• using specialised tools and equipment • using appropriate personal protective equipment (PPE) • identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems.

Unit Mapping Information

Equivalent to AURETR3043 Service and repair electronic body management systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR043 Diagnose and repair electronic body management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in two of the following electronic body management systems of vehicles, vessels or machinery:
  - entry and exit systems, which must include:
    - power door lock circuit
    - key coding to vehicle
    - anti-theft immobilisation circuit
  - power window system
  - lighting system
  - navigation system
  - infotainment system
  - passenger comfort system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing electronic body management systems, including procedures for:
  - using specialised tools and equipment
  - using appropriate personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems

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- electronic body management system principles, including types of electronic body management systems
- application, purpose and operation of electronic body management systems and components, including:
  - entry and exit systems, including:
    - power door lock circuits
    - key coding to vehicles
    - anti-theft immobilisation circuits
  - power window systems
  - lighting systems
  - navigation systems
  - infotainment systems
  - passenger comfort systems
- diagnostic testing procedures for electronic body management systems, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - freeze frame data
    - waveforms
- using diagnostic flow charts
- testing electrical systems, including procedures for:
  - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
  - resistance and voltage drop tests
  - open and short circuit tests
  - checking shorts to signal, power circuits and grounds
- repair procedures for electronic body management systems, including procedures for removing and replacing system components
- post-repair testing procedures for electronic body management systems, including:
  - DTC clearing procedures
  - static and dynamic performance tests of electronic body management systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electronic body management systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer body management system specifications
- vehicles, vessels or machinery with electronic body management system faults
- diagnostic equipment for body management systems, including:
  - multimeter
  - scan tool
- tools, equipment and materials appropriate for repairing vehicle, vessel or machinery electronic body management systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR045 Inspect, service and repair DC electric motor drive systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, service and repair direct current (DC) electric motor drive systems in vehicles, vessels or machinery. It involves preparing for the task, inspecting DC electric motor drive systems, repairing the systems, and completing workplace processes and documentation, including associated recommendations for further action.

It applies to those working in the automotive service and repair industry. The DC electric motor drive systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect, service and repair DC electric motor drive system	1.1 Job requirements are determined according to workplace instructions 1.2 Inspection and servicing procedures are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect and test system	2.1 System is inspected and tested according to workplace procedures and ***safety requirements*** 2.2 Circuits are tested according to workplace procedures and without causing damage to components or systems 2.3 Inspection results are compared with manufacturer specifications 2.4 Inspection findings are reported according to workplace procedures, including recommendations for required repairs or adjustments
3. Service and repair system	3.1 System is serviced and repaired according to manufacturer and component specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 System is performance tested and final adjustments are made 3.3 Post-repair testing is carried out to confirm system is operating to manufacturer specifications, any reported problems are resolved, and no other problems are present
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and diagrams from manufacturer specifications and workplace procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions and report inspection findings to appropriate personnel.
Numeracy skills to:	• interpret vehicle electrical measurements and readings on digital and analogue gauges • measure voltage, current and resistance and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Technology skills to:	• use specialised tools and electrical test equipment to inspect, service and repair DC electric motor drive systems, including multimeters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
	  • working safely with high current electrical systems.

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Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR045 Inspect, service and repair DC electric motor drive systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, service and repair three of the following direct current (DC) electric motor drive systems in vehicles, vessels or machinery:
  - brush commutator motor
  - stepper motor assembly
  - brushless hall effect motor
  - magnetic flux array motor.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, servicing and repairing DC electric motor drive systems, including procedures for:
  - selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
  - working safely with high current electrical systems
- operating principles of DC electric motor drive systems, including:
  - brush commutator motors, including of:
    - permanent magnet motor
    - series motor
    - shunt motor
    - compound motor
  - brushless motors, including:

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        - stepper motors, including rotary position actuators
        - hall effect motor
    - magnetic flux array motors
- application, purpose and operation of DC electric motor drive systems, including:
    - power operated windows, door and roofs
    - power operated seats, mirrors and radio antennas
    - winches and lifting platforms
    - rotary position actuators
    - brushless traction motors
    - magnetic flux array, including wheel hub motors
- inspection procedures for DC electric motor drive systems, including analysing system operation
- procedures for testing DC electric motor drive systems, including:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - procedures for using and operating electrical test equipment, including:
        - digital multimeters
        - test lights and probes
        - oscilloscopes
- service and repair procedures for DC electric motor drive systems, including:
    - component removal and replacement procedures
    - component and associated system adjustment procedures
- post-repair testing procedures of DC electric motor drive systems, including:
    - confirming that system is operating to manufacturer specifications
    - confirming that no other problems are present as a result of the repair.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the DC electric motor drive systems that they have inspected, serviced and repaired, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer DC electric drive motor specifications
- PPE, including clothing, and eye and hand protection
- three different vehicles, vessels or machinery with the DC electric motor drive systems specified in the performance evidence requiring repair
- tools, equipment and materials appropriate for inspecting, servicing and repairing DC electric motor drive systems, including multimeter.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR048 Construct and test basic electronic circuits

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to construct and test basic electronic circuits using a small number of standard electronic components. It requires the learner to plan and prepare the task, select the correct equipment, construct and test electronic circuits, and check and store the electrical test equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to construct basic electronic circuit	1.1 ***Safety and environmental requirements*** are sourced and interpreted

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ELEMENT	PERFORMANCE CRITERIA
	1.2 Task instruction is interpreted and ***electronic circuit*** to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for electronic circuitry are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor
2. Draw circuit diagrams and identify equipment and materials to construct electronic circuit	2.1 Electronic circuit diagrams that accurately reflect the circuit specifications are drawn according to manufacturer specifications 2.2 Electronic components are depicted correctly in circuit diagram using standard symbols 2.3 Component and material requirements are identified from electronic circuit diagram and recorded
3. Construct electronic circuit	3.1 Tools, equipment and electronic components are sourced and selected according to manufacturer specifications and safety requirements 3.2 Component manufacturer installation and connection information is read, interpreted and applied 3.3 Circuit is constructed using ***electronic components*** according to manufacturer specifications and safety requirements
4. Test electronic circuit	4.1 Circuit fault testing equipment is identified and sourced according to workplace procedures, manufacturer specifications and safety requirements 4.2 Electronic circuit is tested according to workplace procedures, manufacturer specifications and safety requirements 4.3 Faults detected are corrected and circuit is re-tested to confirm their operation 4.4 Circuit testing procedures and outcomes are recorded
5. Complete work processes	5.1 Final inspection is made to ensure work meets task instruction and workplace standards, and that electronic circuit is constructed ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 5.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 5.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of electronic circuit information and electrical test equipment operating procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures relating to constructing basic electronic circuits • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• read and interpret numerical information imbedded in electronic components' identification codes • use basic mathematical operations, including addition, subtraction, multiplication and division, when using Ohm's law and Watt's law to calculate electrical voltage, current flow, resistance and power • read and interpret electrical test equipment correctly, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. Ω for ohms).
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes.
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.
Technology skills to:	• set up and operate equipment and tools required to construct basic electronic circuits.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• information about key aspects of work health and safety (WHS) and occupational health and safety (OHS) requirements, including: • use of personal protective equipment, including safety glasses • use of tools • identification of electrical hazards • applying procedures for disposing of used electronic circuit components and materials.
Electronic circuit must include:	• printed circuit board.
Electronic components must include:	• heat sinks • electronic wiring • terminals • solders • switches • lamps • relays • diodes • resistors • capacitors • transistors.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETR048 Construct and test basic electronic circuits

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly and safely construct and test two different basic electronic circuits.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements relating to the construction of basic electronic circuits, including:
  - use of personal protective equipment, including safety glasses
  - use of soldering irons
  - use of hand tools and electrical test equipment
  - identification of electrical risks and hazards
  - disposal of used electronic components
- meaning of electrical terms, including:
  - voltage
  - amperage
  - watts
  - current
  - resistance
- theory of electrical circuits, including:
  - Ohm's law
  - Watt's law
- types and application of electronic components, including:
  - heat sinks

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  - electronic wiring
  - terminals
  - solder
  - switches
  - lamps
  - potentiometers
  - relays
  - diodes
  - resistors
  - capacitors
  - transistors
  - integrated circuits
- types, application and operation of basic electronic circuits, including:
  - flashing circuits
  - timing circuits
  - speed control circuits
  - methods for drawing electronic circuit diagrams
  - procedures for constructing basic electronic circuits
  - procedures for testing electronic circuits, and identifying and rectifying faults
- work area clean-up and maintenance requirements.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having constructed basic electronic circuits, e.g. circuit diagrams.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace, including a safe work area for constructing electronic circuit boards
- personal protective equipment appropriate to the workplace, including safety glasses
- electronic components and materials, including:
  - heat sinks
  - electronic wiring
  - terminals
  - solders
  - switches

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- lamps
- relays
- diodes
- resistors
- capacitors
- transistors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETR136 Diagnose and repair electronically controlled suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to diagnose and repair faults in electronically controlled suspension systems. These systems include two-wire high and low speed (CAN-bus) and single wire low speed (LIN-bus) networked circuits in the embedded network electronic control system of a vehicle or machinery. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

This unit applies to those working within the automotive service and repair industry. The electronically controlled suspension systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Diagnose electronically controlled suspension system	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret diagnostic information in order to identify diagnostic options required for the job 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies 1.4 Identify diagnostic tools and equipment required for the job and examine for serviceability

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	1.5 Perform diagnostic tests according to workplace procedures and workplace health and safety requirements 1.6 Examine diagnostic test results to identify causes of faults, report findings and make recommendations for necessary repairs or adjustments according to workplace procedures
2. Repair and test electronically controlled suspension system	2.1 Obtain and interpret repair information in order to identify repair options required for the job 2.2 Identify repair tools, equipment and materials for the job and examine for serviceability 2.3 Carry out repairs or component replacements and adjustments according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements to confirm fault rectification and repair any issues identified
3. Complete work processes	3.1 Carry out final inspection to ensure work meets workplace expectations and vehicle or machinery is ready for use 3.2 Clear work area and dispose of waste or recycle materials according to workplace procedures 3.3 Examine and store tools and equipment, ensuring faulty electrical equipment is identified, tagged and isolated according to workplace procedures 3.3 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of electronically controlled suspension system information efficiently
Reading skills to:	• read and interpret information from workplace procedures and documentation when seeking electronically controlled steering system specifications and procedures
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used
Oral communication skills to:	• clarify instructions • report diagnostic findings • make repair recommendations

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Numeracy skills to:	• use basic mathematical operations, including addition and subtraction • calculate deviations from manufacturer specifications • match electronically controlled suspension system components and part identification numbers to workplace instructions, vehicle or machinery component part lists, and manufacturer specifications • measure voltage, current and resistance • interpret vehicle or machinery electrical measurements and readings
Planning and organising skills to:	• plan own work requirements • prioritise actions to achieve required outcomes • ensure tasks are completed within workplace timeframes
Technology skills to:	• use specialised equipment, including multimeters • use diagnostic scan tools

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURETR136 Diagnose and repair electronically controlled suspension systems (Release 1)	AURETR036 Diagnose and repair electronically controlled suspension systems (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Combination of performance elements to create three performance criteria. Removal of references to OHS requirements. Removal of range of conditions. Explicit reference to the use of diagnostic scan tools in foundation skills. Addition of minor elements to knowledge evidence.	Equivalent

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		Addition of assessor requirements.	

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Assessment Requirements for AURETR136 Diagnose and repair electronically controlled suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate a diagnosis and repair of electronically controlled suspension systems that safely follows workplace procedures to meet required outcomes. This includes:

- diagnosis and repair of a fault within the following electronically controlled suspension system components of two different vehicles or machinery:
  - ride height sensor circuits
  - wheel speed sensor circuits
  - steering rate sensor circuits
  - ride height control relay circuits
  - air compressor motor control circuits
  - air spring fill-vent solenoid control valve circuits
- diagnosis and repair of one electronically controlled steering system in which the work must include removing, refitting or replacing and re-testing one of the following components:
  - solenoid actuated shock absorber
  - load sensing shock absorber
  -

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures relating to the diagnosis, testing and repair of electronically controlled suspension systems including:

- how to locate and interpret manufacturers specifications or equivalent documentation and workplace procedures for the diagnosis and repair of electronically controlled suspension systems
- the following workplace health and safety requirements for diagnosis and repair of electronically controlled suspension systems:

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    - procedures for using specialised tools and equipment
    - knowledge of the appropriate personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with working with stored energy in springs and torsion bars
    - procedures for removing tension from suspension components
    - identifying hazards and controlling risks associated with manual handling heavy suspension system components
- environmental procedures for diagnosis, testing and repair of electronically controlled suspension systems
- the following diagnostic testing procedures for electronically controlled suspension systems:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - freeze frame data
        - waveforms
    - using diagnostic flow charts
- the following electrical systems testing procedures:
    - accessing electrical terminals
    - using test probes without damaging connectors, fuse holders or wiring
    - undertaking resistance tests
    - undertaking voltage drop tests
    - testing open circuits
    - testing short circuits
    - checking shorts to signal, power circuits and grounds
- the following repair procedures for electronically controlled suspension systems:
    - removing and replacing system components
- the following post-repair testing procedures for electronically controlled suspension systems:
    - DTC clearing procedures
    - static and dynamic performance tests of suspension system
- workplace housekeeping and documentation procedures

Electronically controlled suspension system information, including:

- the operating principles of:
    - vehicle ride and handling
    - typical vehicle or machinery equipped with electronically controlled suspension systems
- the purpose and operation of the following electronically controlled suspension systems and components:

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  - adaptive suspension control module
  - control sensors and actuators
- the purpose and operation of the following suspension control module functions within electronically controlled suspension systems:
  - control of air spring settings
  - shock damper settings
  - air compressor operation
  -

Assessment Conditions

Mandatory conditions for the assessment of this unit are stipulated below.

The assessment must:

- include access to:
  - automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to diagnosis and repair activity
  - workplace procedures relating to diagnosis and repair activity
  - manufacturer electronically controlled suspension systems specifications and procedures of equivalent documentation to complete diagnose and repair activity
  - two different vehicles or machinery with faults in the electronically controlled suspension system components specified in the performance evidence
  - diagnostic equipment for electronically controlled steering systems, including:
    - multimeter
    - scan tool
  - tools, equipment and materials suitable for repairing electronically controlled suspension systems of vehicle and machinery
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards

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AURETU001 Install air conditioning systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install automotive air conditioning systems in vehicles and machinery for driver and passenger convenience and comfort. It involves preparing for the task, installing and testing the operation of automotive air conditioning systems, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. Air conditioning systems include those being installed in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing requirements apply to this unit. Users are advised to check with the relevant regulatory authority. An Australian Refrigeration Council (ARCtick) Restricted Refrigerant Handling licence is required for those carrying out this work.

Competency Field

Electrical

Unit Sector

Technical - Air Conditioning and HVAC

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install air conditioning system	1.1 Job requirements are determined according to workplace instructions 1.2 ***Installation information*** is sourced and interpreted 1.3 ***Installation options*** are considered and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Install air conditioning system components	2.1 Air conditioning system components are installed according to workplace procedures and ***safety and environmental requirements***, and without causing damage to components and vehicle or machinery systems 2.2 Installation is visually checked prior to pressure testing and system charging
3. Charge air conditioning system with refrigerant and lubricating oil	3.1 System is pressure tested for leaks prior to being evacuated using approved methods and equipment 3.2 System is charged with appropriate refrigerant gas and lubricating oil according to manufacturer specifications, workplace procedures, and relevant industry code of practice
4. Test air conditioning system	4.1 Post-installation testing is carried out to ensure performance and operation comply with manufacturer specifications 4.2 Test results are reported according to workplace procedures
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation, including ***ARCtick service decal sticker***, is completed and processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking specifications and procedures • interpret requirements of the Australian automotive code of practice relating to installing automotive air conditioning systems.
Writing skills to:	• legibly and accurately fill out workplace documentation, including ARCtick stickers, when reporting work performed and recording parts and material used.
Oral communication skills to:	• clarify instructions • report findings and make installation recommendations.
Numeracy skills to:	• match refrigerant types and identification numbers to workplace instructions, vehicle and component part lists, manufacturer specifications and regulatory requirements • interpret weight measurements, including tare and gross weights, and readings on digital and analogue pressure gauges • interpret measurements of temperature and pressure related to air conditioning system performance and compare with manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use workplace technology and specialist tools relating to installing and testing air conditioning systems.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Installation information	• manufacturer specifications

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must include:	• installation fitting instructions • Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners.

Installation options must include:	• refrigerant types:
	  • R134a
	  • R1234yf
	  • R290 and R600a blends
	• fluid levels:
	  • refrigerant
	  • lubricating oils
	• filter serviceability:
	  • receiver dryer
	  • cabin filter
	• O rings and seals
	• adjustments and operational testing
	• visual inspections and documentation.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with refrigerants at boiling point given risk of frostbite
	  • working with system lubricants, including carcinogenic oils
	  • handling flammable refrigerants and refrigerant recovery equipment
	  • selecting and using personal protective equipment (PPE)
	  • identifying and using fire safety equipment
	• environmental requirements, including procedures for preventing loss of refrigerant to atmosphere.

ARCtick service decal sticker information must include:	• name of the service organisation • ARCtick business authority number • quantity of refrigerant added • refrigerant and oil type • service date • technician’s name and licence number.

Unit Mapping Information

Equivalent to AURETU2001 Install air conditioning systems

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Links

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Assessment Requirements for AURETU001 Install air conditioning systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- install an air conditioning system in two different vehicles or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing air conditioning systems, including procedures for:
  - working with refrigerants at boiling point given risk of frostbite
  - working with system lubricants, including carcinogenic oils
  - handling flammable refrigerants and refrigerant recovery equipment
  - selecting and using personal protective equipment (PPE)
  - identifying and using fire safety equipment
- environmental requirements, including procedures for preventing loss of refrigerant to the atmosphere.
- methods for locating manufacturer specifications and workplace procedures, including safe operating procedures and current Australian automotive code of practice
- requirements of Automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- principal types of vehicle air conditioning systems, including:
  - piston, scroll and rotary vane compressors
  - electric compressors
  - variable displacement compressors
  - clutchless compressors

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- application, purpose and operation of air conditioning systems, including:
  - climate control
  - multi-zone systems
- refrigerant types, operating pressures and suitable lubricating oils
- techniques for reading and interpreting technical information, including:
  - refrigerant saturation temperatures in relation to ambient temperatures and changing levels of humidity
  - graphic symbols and diagrams
- procedures for using and operating tools and equipment, including:
  - hand tools
  - manifold and gauge sets
  - refrigerant hoses and couplers
  - recovery units and vacuum pumps
  - electronic leak detector
  - nitrogen cylinder and regulator
  - digital vacuum gauge (vacrometer)
  - oil injector
  - infra-red thermometer (pyrometer)
  - electronic temperature probe
  - electronic scales
  - valve core removal or replacement tool
  - humidity detector (psychrometer)
  - multimeter
- procedures for installing air conditioning systems and components, including:
  - techniques for reading and interpreting technical information, wiring diagrams and graphic symbols
  - methods of determining wiring and connection type and size for system
  - methods of determining placement of components on vehicle or machinery
  - methods of connecting system and components to existing electrical system without causing damage or problems, including:
    - selecting and soldering wires
    - selecting and crimping terminals
    - removing and replacing connectors
- post-installation testing procedures, including:
  - validating effectiveness of installation, including checking for:
    - electrical connector mating
    - ambient temperature
    - centre vent temperature
    - condenser and suction line temperature
    - manifold gauge pressure readings

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    - refrigerant leaks
- procedures for completing workplace documentation, including ARCtick sticker.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air conditioning systems that they have installed in vehicles or machinery, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- vehicle and machinery wiring specifications relevant to system and components being installed
- manufacturer air conditioning system specifications
- Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners.
- two different vehicles or machinery requiring installation of air conditioning systems
- material necessary to install air conditioning system components
- tools, equipment and materials appropriate for installing air conditioning system components, including:
    - manifold and gauge set
    - recovery unit
    - vacuum pump
    - electronic leak detector
    - nitrogen cylinder and regulator
    - digital vacuum gauge (vacrometer)
    - multimeter
    - electronic scales

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- oil injector
- infra-red thermometer (pyrometer)
- electronic temperature probe
- valve core removal or replacement tool
- humidity detector (psychrometer)
- air conditioning gas appropriate to system being installed.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETU002 Recover vehicle refrigerants

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to recover vehicle air conditioner refrigerants in designated recovery cylinders for disposal according to safety and environmental procedures while observing critical precautions, given that refrigerant may be flammable.

It applies to those working as vehicle dismantlers, automotive parts recycling contractors, and vehicle body repairers in automotive service and repair workplaces who are required to recover automotive air conditioning refrigerants. Automotive air conditioners, including heating, ventilation and air conditioning (HVAC) systems, include those in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing requirements apply to this unit. Users are advised to check with the relevant regulatory authority. An Australian Refrigeration Council accredited (ARCtick) Restricted Refrigerant Recoverer licence is required for those carrying out this work.

Competency Field

Electrical

Unit Sector

Technical - Air Conditioning and HVAC

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for refrigerant recovery	1.1 Job requirements are determined from workplace instructions 1.2 Refrigerant recovery workplace procedures and relevant ***code of practice*** are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Vehicle air conditioning system, components and refrigerant service ports are identified for refrigerant recovery 1.5 ***Recovery equipment***, personal protective equipment (PPE) and firefighting equipment, are checked for serviceability according to manufacturer specifications and workplace procedures
2. Operate recovery equipment	2.1 Vehicle refrigerant is identified with a refrigerant identifier or analyser 2.2 Designated recovery cylinder is weighed to determine available capacity, and tare weight of cylinder is recorded 2.3 Recovery equipment is connected to vehicle according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.4 Refrigerant is recovered and transferred into designated recovery cylinder using recovery equipment according to manufacturer specifications, workplace procedures, and safety and environmental requirements 2.5 Problems are responded to appropriately and escalated according to workplace procedures
3. Complete work processes	3.1 Quantity and details of recovered refrigerant are recorded according to workplace procedures and regulatory requirements 3.2 Recovery equipment, hoses and recovery cylinder are shut down and disconnected, and cylinders capped, according to workplace procedures 3.3 Refrigerant is stored in designated recovery cylinder according to workplace procedures 3.4 Recovery equipment and tools are checked and stored, and faulty equipment is identified, tagged and isolated according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and diagrams in workplace and safe operating procedures and manufacturer specifications • interpret critical precautions of the Australian automotive code of practice relating to automotive refrigerant recovery.
Writing skills to:	• legibly and accurately enter information in regulatory reports and fill out other required workplace documentation.
Oral communication skills to:	• ask questions to clarify job requirements.
Numeracy skills to:	• match refrigerant types and identification numbers to workplace procedures and code of practice requirements • interpret weight measurements, including tare and gross weights • interpret readings on digital and analogue pressure gauges • complete numerical data in documentation and charts.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use workplace technology and tools, such as refrigerant analyser, vacuum recovery equipment, and scales.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Code of practice must include:	• Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners.
Recovery equipment must include:	• refrigerant hose and coupler • refrigerant recovery unit • refrigerant scales

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	• refrigerant identifier or analyser • designated and appropriately labelled recovery cylinders.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with refrigerants at boiling point given risk of frostbite
	  • working with system lubricants, including carcinogenic oils
	  • handling flammable refrigerants
	  • selecting and using PPE
	  • identifying firefighting equipment
	• environmental requirements, including procedures for:
	  • preventing loss of refrigerant to the atmosphere
	  • storing and transporting refrigerants.

Unit Mapping Information

Equivalent to AURETU2002 Recover vehicle refrigerants

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETU002 Recover vehicle refrigerants

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- recover vehicle refrigerants from three different vehicles or machinery, in which the work must involve one of the following refrigerant types:
  - synthetic greenhouse and ozone depleting (SGOD) refrigerant
  - hydrocarbon (HC) refrigerant
  - a mixture of SGOD and HC refrigerant.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to safety requirements for recovering vehicle refrigerants, including procedures for:
  - working with refrigerants at boiling point given risk of frostbite
  - working with system lubricants, including carcinogenic oils
  - handling flammable refrigerants
  - selecting and using personal protective equipment (PPE)
  - identifying firefighting equipment
- environmental requirements associated with refrigerant recovery and refrigerant waste disposal, including procedures for:
  - preventing loss of refrigerant to the atmosphere
  - storing and transporting refrigerants
- Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners

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- key features of various types of refrigerants and oils found in automotive vehicle and equipment HVAC systems, including:
  - synthetic SGOD refrigerants, including:
    - chlorofluorocarbons (CFC)
    - hydrofluorocarbons (HCFC)
  - HC refrigerants
  - mineral and synthetic refrigerant oils
- types, application and operation of refrigerant recovery equipment, including:
  - manifold and gauge set
  - recovery unit
  - types of recovery cylinders
- procedures for recovering automotive refrigerant, including:
  - testing refrigerant to determine its type
  - connecting manifold and gauge set and recovery unit, including types and location of service ports
  - identifying recovery cylinder appropriate to the refrigerant
  - operating recovery unit, including weighing recovery cylinder before and after recovery
  - disconnecting and storing recovery unit and cylinder
- work completion procedures for recovering vehicle refrigerant, including:
  - work area clean-up and maintenance requirements
  - workplace regulatory documentation to be completed
- completing workplace documentation, including Australian Refrigeration Council accredited (ARCtick) service decal sticker.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to vehicle refrigerant that they have recovered from HVAC systems, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace, parts recycling yard or simulated workplace
- workplace instructions
- PPE and firefighting equipment required when recovering vehicle refrigerants
- Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- three different vehicles or machinery with refrigerant to be recovered
- refrigerant recovery equipment designed for safe operation, including:
  - hose and vehicle couplings
  - refrigerant scales
  - refrigerant identifier or analyser
  - vehicle refrigerant designated and labelled recovery cylinders
  - appropriate hand tools for refrigerant recovery.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETU003 Service air conditioning and HVAC systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to service air conditioning systems, including heating, ventilation and air conditioning (HVAC) systems, fitted to a range of vehicles and machinery. It involves preparing for the task, carrying out performance testing and correct servicing procedures, performing post-service testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. Automotive air conditioners, including HVAC systems, include those in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing requirements apply to this unit. Users are advised to check with relevant regulatory authority. An Australian Refrigeration Council accredited (ARCtick) Refrigerant Handling licence is required for those carrying out this work.

Competency Field

Electrical

Unit Sector

Technical - Air Conditioning and HVAC

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to service system	1.1 Job requirements are determined from workplace instructions 1.2 Service information, manufacturer specifications, and relevant ***code of practice*** are accessed and interpreted 1.3 Servicing options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Servicing tools and equipment are selected and checked for serviceability
2. Test operation of system and components	2.1 System is visually checked to establish extent of possible failure or damage 2.2 System performance tests are carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements,*** and without causing damage to components or system 2.3 Findings, including recommendations for required repairs or adjustments, are reported according to workplace procedures
3. Service system and components	3.1 System and components are serviced according to manufacturer specifications, workplace procedures and relevant code of practice 3.2 Code of practice regulations regarding topping up refrigerant are interpreted and applied during service procedures 3.3 ***Post-service performance tests*** are carried out to confirm that reported service issue has been resolved and that no other problems are present
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 ***Australian Refrigeration Council accredited (ARCtick) service decal sticker*** and other required workplace documentation are completed and processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and diagrams relating to service information in manufacturer specifications, and workplace instructions and procedures • interpret key requirements of Australian automotive code of practice relating to servicing air conditioning and HVAC systems.
Writing skills to:	• legibly and accurately fill out workplace documentation, including ARCtick stickers, when reporting test findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• listen to workplace instructions and ask questions to clarify job requirements • participate in verbal exchanges to report faults, diagnostic and test findings and service repair recommendations to relevant personnel.
Numeracy skills to:	• match refrigerant types and identification numbers to workplace instructions, part lists, manufacturer specifications, and code of practice requirements • interpret weight measurements, including tare and gross weights • interpret readings on digital and analogue pressure gauges • measure temperatures and pressures, and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use workplace technology and tools, such as refrigerant vacuum recovery equipment and manifold gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Code of practice must include:	• Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with refrigerants at boiling point given risk of frostbite
	  • working with system lubricants, including carcinogenic oils
	  • identifying flammable refrigerants
	  • selecting and using personal protective equipment (PPE)
	  • identifying firefighting equipment
	• environmental requirements, including procedures for:
	  • preventing loss of refrigerant to the atmosphere
	  • handling materials and refrigerant recovery equipment.

Post-service performance tests must include:	• temperature checks • checking for refrigerant leaks.
Australian Refrigeration Council accredited (ARCtick) service decal sticker information must include:	• name of service organisation • ARCtick business authority number • quantity of refrigerant added • refrigerant and oil type • service date • technician name and licence number.

Unit Mapping Information

Equivalent to AURETU2003 Service air conditioning and HVAC systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETU003 Service air conditioning and HVAC systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- service the air conditioning and HVAC systems of two different vehicles or machinery, in which the work must involve:
  - one air conditioning system
  - one heating, ventilation and air conditioning (HVAC) system
- complete Australian Refrigeration Council accredited (ARCtick) service decal stickers for the above jobs.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to servicing air conditioning and HVAC systems, including procedures for:
  - working with refrigerants at boiling point given risk of frostbite
  - working with system lubricants, including carcinogenic oils
  - identifying flammable refrigerants
  - selecting and using personal protective equipment (PPE)
  - identifying firefighting equipment
- environmental requirements, including procedures for:
  - preventing loss of refrigerant to the atmosphere
  - handling materials and refrigerant recovery equipment.
- key requirements of Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners

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- identification and function of major air conditioning and HVAC system components, including:
  - compressor
  - condenser
  - receiver-dryer
  - expansion valve
  - evaporator
  - blower fan
- principles of operation of air conditioning and HVAC systems, including transferring heat from cabin to exterior using refrigerant gas
- types of air conditioning and HVAC systems, including:
  - single zone and multi-zone
  - climate control
- inspection procedures for air conditioning and HVAC systems, including:
  - conducting visual, aural and functional assessments for:
    - component damage and wear
    - component corrosion
    - vacuum and leaks
  - system performance testing, including:
    - using manifold gauges and thermometers to check system pressures and vent temperatures
    - checking blower fan output
    - checking engine fan output
    - checking filters
  - using manifold gauges and thermometers to check pressure and temperatures
- service and adjustment procedures of air conditioning and HVAC systems, including:
  - checking and adjusting compressor drive belts
  - changing filters
  - clearing evaporator water outlet
  - cleaning condenser
- post-service testing procedures of air conditioning and HVAC systems, including system performance testing and using thermometers to check vent temperatures
- procedures for completing workplace documentation, including ARCtick service decal sticker.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air conditioning and HVAC systems that they have serviced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive service repair workplace or simulated workplace
- workplace instructions
- air conditioning and HVAC system manufacturer specifications
- Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- two different vehicles or machinery with air conditioning and HVAC systems requiring servicing
- tools, equipment and materials appropriate for servicing air conditioning and HVAC systems, including:
  - thermometer
  - manifold and gauge set.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETU004 Diagnose and repair air conditioning and HVAC systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the air conditioning systems, including heating, ventilation and air conditioning (HVAC) systems, fitted to a range of vehicles and machinery for passenger convenience and comfort. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in an automotive service and repair industry. Automotive air conditioners, including HVAC systems, include those in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing requirements apply to this unit. Users are advised to check with relevant regulatory authority.

Competency Field

Electrical

Unit Sector

Technical - Air Conditioning and HVAC

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair air conditioning and HVAC system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose air conditioning and HVAC system	2.1 Diagnostic tests are carried out according to workplace procedures and ***safety and environmental requirements*** using appropriate tools and techniques without causing damage to components or system 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings and recommendations for necessary repairs or adjustments are reported according to workplace procedures
3. Repair air conditioning and HVAC system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked according to manufacturer specifications and workplace procedures 3.4 Repairs and component replacements and adjustments are carried out according to ***requirements***, and without causing damage to components or systems 3.5 System is recharged with the appropriate refrigerant gas according to manufacturer specifications and workplace procedures 3.6 ***Post-repair testing*** is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and the vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	4.3 Tools and equipment are checked and stored and faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 ***Australian Refrigeration Council accredited service decal sticker (ARCtick)*** and other required workplace documentation are completed and processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• identify and locate various sources of information efficiently.
Reading skills to:	• interpret text, symbols and wiring diagrams relating to diagnostic and repair information from manufacturer specifications and workplace instructions and procedures • interpret requirements relevant to diagnosing and repairing air conditioning and HVAC systems of the Australian automotive code of practice.
Writing skills to:	• legibly and accurately fill out workplace documentation, including ARCtick stickers, when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• match refrigerant types and identification numbers to workplace instructions, parts lists, manufacturer specifications, code of practice and regulatory requirements • interpret weight measurements, including tare and gross weights • interpret readings on pressure gauges • measure temperatures and pressures and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising	• plan own work requirements and prioritise actions to achieve

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Skills	Description
skills to:	required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised equipment, including refrigerant vacuum recovery equipment and manifold gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with refrigerants at boiling point given risk of frostbite
	  • working with system lubricants, including carcinogenic oils
	  • handling flammable refrigerants
	  • using personal protective equipment (PPE)
	  • identifying and using fire safety equipment
	• environmental requirements, including procedures for preventing loss of refrigerant to the atmosphere.

Repairs and component replacement and adjustment requirements must include:	• manufacturer specifications • workplace procedures • Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners.

Post-repair testing must include:	• validating the effectiveness of the repair action by checking the following:
	  • ambient temperature
	  • centre vent temperature
	  • condenser and suction line temperature
	  • manifold gauge pressure readings
	  • refrigerant leaks
	  • heater core and system water coolant leaks.

Australian Refrigeration Council accredited (ARCtick) service decal	• name of the service organisation • name of technician • Refrigerant Handling Licence Number

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sticker information must include:	• vehicle registration number • service date • refrigerant type • lubricant type.

Unit Mapping Information

Equivalent to AURETU3004 Diagnose and repair air conditioning and HVAC systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETU004 Diagnose and repair air conditioning and HVAC systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements and performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in the air conditioning and heating, ventilation and cooling (HVAC) systems of two different vehicles or machinery, in which the work must involve removing, refitting or replacing two of the following:
  - condenser
  - evaporator
  - expansion valve
  - compressor
  - heater box.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing air conditioning and HVAC systems, including procedures for:
  - working with refrigerants at boiling point given risk of frostbite
  - working with system lubricants, including carcinogenic oils
  - handling flammable refrigerants
  - using personal protective equipment (PPE)
  - identifying and using fire safety equipment
- environmental requirements, including procedures for preventing loss of refrigerant to the atmosphere

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- key requirements relevant to diagnosing and repairing air conditioning and HVAC systems detailed in the Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- air conditioning and HVAC system principles, including:
  - heat transfer principles, including convection, conduction and radiation
  - functions of the following air conditioning components:
    - compressor
    - condenser
    - receiver-drier
    - evaporator
    - blower fan
    - refrigerant
  - functions of the following heating components:
    - radiator
    - thermostat
    - radiator and heater hoses
    - heater tap
    - heater box
  - single zone and multi-zone vehicle layouts
- application, purpose and operation of air conditioning and HVAC systems and components, including:
  - high pressure and low pressure sides of air conditioning systems
  - compressors, including:
    - axial type, including variable capacity compressors
    - scroll type
    - vane type
  - electromagnetic clutches
  - condensers
  - receiver-dryer, including filters and desiccants
  - expansion valves, including capillary tube
  - evaporator
  - thermostat
  - refrigerants, including R12, R134, R1234yf and hydrocarbon refrigerants
  - compressor oils
  - air conditioner and heating controls, including levers and ducting
  - air conditioner and heating electrical circuits and sensors, including:
    - high and low pressure switches
    - pressure relief valves
    - temperature sensors

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    - climate control systems
- diagnostic testing procedures for air conditioning and HVAC systems, including:
    - using diagnostic flow charts
    - using manifold gauges on systems with different refrigerants, including analysis of high and low pressure readings in conjunction with temperature probes
    - testing electrical systems, including procedures for:
        - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - resistance and voltage drop tests
        - open and short circuit tests
        - checking shorts to signal, power circuits and grounds
- repair procedures for air conditioning and HVAC systems, including procedures for:
    - using manifold gauges to discharge, evacuate and charge system refrigerants
    - removing and replacing system components
- post-repair testing procedures for air conditioning and HVAC systems, including procedures for checking for:
    - refrigerant leaks
    - heater core and system water coolant leaks
- static and dynamic performance tests of air conditioning and HVAC systems, including checking:
    - ambient temperature
    - vent temperature
    - condenser and suction line temperature.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air conditioning and HVAC systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for air conditioning and HVAC systems
- Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- ARCtick service decal stickers
- procedures for servicing and adjusting vehicle air conditioning and HVAC systems
- two different vehicles or machinery with air conditioning and HVAC system faults
- diagnosis and repair equipment for air conditioning and HVAC systems, including:
  - manifold and gauge set
  - recovery unit
  - vacuum pump
  - electronic leak detector
  - nitrogen cylinder and regulator
  - multimeter
  - electronic scales
  - oil injector
  - infra-red thermometer
  - temperature probe
  - scan tool.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETU005 Retrofit and modify air conditioning and HVAC systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to retrofit and modify air conditioning systems, including heating, ventilation and air conditioning (HVAC) systems, fitted to a range of vehicles and machinery. It involves preparing for the task, selecting the correct de-gas procedure, carrying out the retrofit and modification procedures, performing post-modification testing, and completing workplace processes and documentation.

Air conditioning systems may contain a mixture of both natural and flammable synthetic refrigerants that are difficult to accurately identify and safely recover. To minimise the possibility of ignition, the procedures and equipment used when recovering refrigerants must be those required for flammable refrigerants.

It applies to those working in the automotive service and repair industry. Automotive air conditioners, including HVAC systems, include those in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing requirements apply to this unit. Users are advised to check with relevant regulatory authority. An Australian Refrigeration Council accredited (ARCtick) Refrigerant Handling licence is required for those carrying out this work.

Competency Field

Electrical

Unit Sector

Technical - Air Conditioning and HVAC

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to retrofit system	1.1 Job requirements are determined from workplace instructions 1.2 Retrofit information, manufacturer specifications, and relevant ***code of practice*** are accessed and interpreted 1.3 Type of refrigerant is determined according to workplace procedures and ***safety and environmental requirements*** 1.4 Retrofit options are analysed and those most appropriate to the circumstances are selected 1.5 Hazards associated with the work are identified and risks are managed 1.6 Retrofit tools and equipment are selected and checked for serviceability
2. De-gas system	2.1 System de-gas procedures are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or system 2.2 Refrigerant is recovered into appropriate refrigerant recovery cylinder for the refrigerant type 2.3 Oil recovered is measured to determine replacement volume 2.4 System is evacuated according to manufacturer specifications, workplace procedures, and safety and environmental requirements
3. Retrofit system	3.1 Technical information relating to vehicle or machinery being retrofitted is accessed and interpreted 3.2 Air conditioning retrofit modification procedures are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 System is pressure tested for leaks before being re-gassed according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.4 System is re-gassed with appropriate refrigerant gas and lubricating oil according to manufacturer specifications and workplace procedures 3.5 Post-modification testing is carried out according to workplace procedures and test results are checked to confirm system performance is operating to manufacturer specifications, reported pre-modification issue has been resolved, and no other faults are

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	present
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and the vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 ***Australian Refrigeration Council accredited (ARCtick) service decal sticker*** and other required workplace documentation are completed and processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret text, symbols and diagrams relating to retrofit and modification information from manufacturer specifications, and workplace instructions and procedures • interpret key requirements of Australian automotive code of practice relating to retrofitting and modifying air conditioning and HVAC systems.
Writing skills to:	• legibly and accurately fill out workplace documentation, including ARCtick stickers, when reporting test findings, making modification recommendations, and recording parts and material used.
Oral communication skills to:	• listen to workplace instructions and ask questions to clarify job requirements.

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Skills	Description
Numeracy skills to:	• match refrigerant types and identification numbers to workplace instructions, vehicle and component part lists, and code of practice requirements • interpret weighting measurements, including tare and gross weights • interpret readings on digital and analogue pressure gauges • measure temperatures and pressures, and use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use workplace technology and tools, such as refrigerant analyser, vacuum recovery equipment and manifold gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Code of practice must include:	• Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with refrigerants at boiling point given risk of frostbite
	  • working with system lubricants, including carcinogenic oils
	  • identifying flammable refrigerants, including hydrocarbon (HC) refrigerants
	  • selecting and using personal protective equipment (PPE)
	  • identifying firefighting equipment
	• environmental requirements, including procedures for:
	  • preventing loss of refrigerant to the atmosphere
	  • handling materials and refrigerant recovery equipment.

Australian Refrigeration	• name of the service organisation

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Council accredited (ARCtick) service decal sticker information must include:	• ARCtick business authority number • quantity of refrigerant added • refrigerant and oil type • service date • technician name and licence number.

Unit Mapping Information

Equivalent to AURETU3005 Retrofit and modify air conditioning and HVAC systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETU005 Retrofit and modify air conditioning and HVAC systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- retrofit and modify the air conditioning and HVAC systems of two different vehicles or machinery, in which the work must include changing the type of refrigerant.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to retrofitting and modifying air conditioning and HVAC systems, including procedures for:
  - working with refrigerants at boiling point given risk of frostbite
  - working with system lubricants, including carcinogenic oils
  - identifying and handling flammable refrigerants, including hydrocarbon (HC) refrigerants
  - selecting and using personal protective equipment (PPE)
  - identifying firefighting equipment
- environmental requirements, including procedures for:
  - preventing loss of refrigerant to the atmosphere
  - handling materials and refrigerant recovery equipment
- key requirements of Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- application, purpose and operation of air conditioning and HVAC systems and components, including:

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- high pressure and low pressure sides of air conditioning systems
- compressors, including:
  - piston, scroll and rotary vane compressors
  - electric compressors
  - variable displacement compressors
  - clutchless compressors electromagnetic clutches
- condensers
- receiver-dryers, including filters and desiccants
- expansion valves, including capillary tubes
- evaporators
- thermostats
- refrigerants, including R12, R134a, R1234yf, R290 and R600a blends
- compressor oils
- air conditioner and heating controls, including levers and ducting
- air conditioner and heating electrical circuits and sensors, including:
  - high and low pressure switches
  - pressure relief valves
  - temperature sensors
- climate control systems

- procedures for retrofitting and modifying air conditioning and HVAC systems, including:
  - determining original system fitted to vehicle, including refrigerant and oil type and types of components
  - determining appropriate retrofit and modification options, including:
    - determining required system performance output
    - component replacement, including O rings and seals
    - refrigerant and oil selection
  - procedures for removing and replacing system components
- procedures for changing system refrigerant, including:
  - changing refrigerant gas from R12 to R134a:
    - receiver dryer filter replacement
    - change system fittings for manifold gauge attachment
    - change oil type
  - changing refrigerant gas from R134a to R1234yf:
    - change refrigerant recharging ports
    - change system fittings for manifold gauge attachment
  - changing refrigerant gas from R134a to blends of R290 and R600a:
    - change refrigerant re-charging ports
    - change system fittings for manifold gauge attachment
- procedures for recovering automotive refrigerant, including:
  - testing refrigerant to determine its type

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  - connecting manifold and gauge set and recovery unit, including types and location of service ports
  - identifying recovery cylinder appropriate to the refrigerant
  - operating recovery unit, including weighing recovery cylinder before after recovery
  - disconnecting and storing recovery unit and cylinder
- procedures for re-gassing air conditioning and HVAC systems, including:
  - testing system for leaks using vacuum and pressure testing
  - using manifold gauges to charge system
- post-retrofit testing procedures for air conditioning and HVAC systems, including procedures for checking for:
  - refrigerant leaks
  - heater core and system water coolant leaks
- static and dynamic performance tests of air conditioning and HVAC systems, including checking:
  - ambient temperature
  - vent temperature
  - condenser and suction line temperature
- procedures for completing workplace documentation, including ARCtick service decal sticker.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air conditioning and HVAC systems that they have retrofitted and modified, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- vehicle or machinery air conditioning and HVAC system manufacturer specifications
- Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners
- two different vehicles or machinery with air conditioning and HVAC systems requiring retrofitting and modification
- retrofit, modification and testing equipment for air conditioning and HVAC systems, including:
  - manifold and gauge set
  - recovery unit
  - vacuum pump
  - leak detector
  - refrigerant analyser.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETU006 Diagnose complex faults in air conditioning and HVAC systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose complex faults in air conditioning and heating, ventilation and air conditioning (HVAC) systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, choosing the diagnostic procedure and tools, applying the diagnostic procedure, reporting conclusions and making repair recommendations.

Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

It applies to those working in an automotive service and repair industry. The air conditioning and HVAC systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels or mobile plant machinery.

Licensing requirements apply to this unit. Users are advised to check with the relevant regulatory authority.

Competency Field

Electrical

Unit Sector

Technical - Air Conditioning and HVAC

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Nature and objective of diagnostic requirements are determined from workplace instructions 1.2 Existence of fault in air conditioning and HVAC system is confirmed from direct or indirect evidence 1.3 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare to carry out diagnosis	2.1 Manufacturer specifications and other technical information for air conditioning and HVAC system are accessed and interpreted 2.2 Diagnostic procedures and options are identified 2.3 Diagnostic method sequence, tests and testing processes are selected from the range of available options 2.4 Testing equipment is selected and prepared according to manufacturer specifications and workplace procedures 2.5 Tools, equipment and materials required to support the diagnostic process are identified, selected and prepared for use
3. Apply diagnostic procedures	3.1 Selected diagnostic process is followed and testing is carried out according to manufacturer specifications, workplace procedures and safety requirements 3.2 Diagnostic findings are verified, as required, by using reliable alternative or optional process according to manufacturer specifications and workplace procedures 3.3 Conclusions are drawn from findings and documented according to workplace procedures, including recommendations for necessary repairs 3.4 Conclusions are provided to appropriate personnel or customer to confirm further action to be taken
4. Complete work processes	4.1 Vehicle, vessel or machinery is presented ready to be repaired or returned to the customer 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate and evaluate appropriate sources of information efficiently • apply diagnostic skills to different vehicles, vessels or machinery.
Reading skills to:	• research, organise and interpret technical information from manufacturer and workshop literature when seeking air conditioning and HVAC system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, gain information from customers and supervisors, report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure air conditioning and HVAC system components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Technology skills to:	• use specialised diagnostic equipment, including:
	  • manifold and gauge sets
	  • leak detectors
	  • digital multimeters
	  • thermometers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • identifying hazards and controlling risks associated with wearing jewellery while working around high electrical currents
	  • working with refrigerants at boiling point given risk of frostbite
	  • working with system lubricants, including carcinogenic oils
	  • handling flammable refrigerants
	  • preventing loss of refrigerant to environment
	  • using personal protective equipment
	  • identifying fire safety equipment (PPE)
	• environmental requirements, including procedures for preventing loss of refrigerant to the atmosphere.

Unit Mapping Information

Equivalent to AURETU4006 Diagnose complex faults in air conditioning and HVAC systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETU006 Diagnose complex faults in air conditioning and HVAC systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose a complex fault in the air conditioning and heating, ventilation and air conditioning (HVAC) systems of two different vehicles, vessels or machinery
- the above diagnosis must involve two of the following types of complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing complex faults in air conditioning and HVAC systems, including procedures for:
  - identifying hazards and controlling risks associated with wearing jewellery while working around high electrical currents
  - working with refrigerants at boiling point given risk of frostbite
  - working with system lubricants, including carcinogenic oils
  - handling flammable refrigerants
  - preventing loss of refrigerant to environment
  - using personal protective equipment (PPE)
  - identifying and using fire safety equipment

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- environmental requirements, including procedures for preventing loss of refrigerant to the atmosphere
- types of complex faults relating to air conditioning and HVAC systems, including:
  - intermittent
  - multi-system
  - introduced as a result of system repair
  - indirect, caused by the influence of external systems
- requirements of Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners, including procedures for preventing loss of refrigerant to atmosphere
- methods for locating and content of manufacturer specifications, workplace procedures and other technical information relating to air conditioning and HVAC systems
- types, function and operation of air conditioning and HVAC systems, including:
  - climate control systems
  - single and dual zone systems
  - electric controlled compressor systems
- testing procedures for air conditioning and HVAC systems, including:
  - vehicle HVAC performance testing
  - component failure analysis
  - vehicle continuous and non-continuous monitored systems
- procedures for using testing and diagnostic tools and equipment, including:
  - scan tools
  - oscilloscopes
  - manifold and gauge sets
  - vacuum pumps
  - leak detectors
  - nitrogen cylinder and regulators
  - digital vacuum gauges (vacrometer)
  - digital multimeters
  - infra-red thermometers (pyrometer)
- types, functions, operation and limitations of diagnostic testing equipment required to diagnose complex faults in vehicle air conditioning and HVAC systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
- methods and processes for documenting and reporting diagnostic findings and recommendations.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air conditioning and HVAC systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer air conditioning and HVAC system specifications
- two different vehicles, vessels or machinery with complex faults in their air conditioning and HVAC systems
- testing and diagnostic tools and equipment appropriate for diagnosing and repairing complex faults in air conditioning and HVAC systems, including:
  - manifold and gauge sets
  - leak detectors
  - digital multimeters
  - thermometers
- tools, equipment and materials appropriate for diagnosing complex faults in air conditioning and HVAC systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETU007 Overhaul air conditioning and HVAC system compressors

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to overhaul and return air conditioning and heating, ventilation and air conditioning (HVAC) system compressors to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the compressor, carrying out the overhaul process, reassembling and testing the compressor, and completing workplace processes and documentation.

It applies to those working in an automotive service and repair industry. The air conditioning and HVAC system compressors include those fitted to agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing requirements apply to this unit. Users are advised to check with relevant regulatory authority.

Competency Field

Electrical

Unit Sector

Technical - Air Conditioning and HVAC

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle air conditioning compressor	1.1 Job requirements are determined from workplace instructions 1.2 Australian automotive code of practice: Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners is sourced and interpreted 1.3 Dismantling information is sourced and interpreted 1.4 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.5 Hazards associated with the work are identified and risks are managed 1.6 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate compressor and components	2.1 Compressor is dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, safety and environmental requirements, and Australian automotive code of practice
4. Assemble compressor and components	4.1 Compressor is assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of compressor is completed within workplace

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Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and compressor is presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate sources of information relevant to compressor efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking air conditioning and HVAC system compressor specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure air conditioning and HVAC system components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer

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Skills	Description
	specifications • match refrigerant types and identification numbers to workplace instructions, vehicle and component part lists, and code of practice requirements • interpret weight measurements, including tare and gross weights, and readings on digital and analogue pressure gauges • interpret measurements of temperature and pressure relating to air conditioner and HVAC system performance.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers and micrometers • use specialised air conditioning and HVAC system compressor overhaul equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with refrigerants at boiling point given risk of frostbite
	  • working with system lubricants, including carcinogenic oils
	  • handling flammable refrigerants
	  • using personal protective equipment (PPE)
	  • identifying fire safety equipment
	• environmental requirements, including procedures for preventing loss of refrigerant to the atmosphere.

Unit Mapping Information

Equivalent to AURETU4007 Overhaul air conditioning system components

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETU007 Overhaul air conditioning and HVAC system compressors

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul the air conditioning compressors of two different vehicles or machinery, including:
  - piston, scroll and rotary vane compressors
  - electric compressors
  - variable displacement compressors
  - clutchless compressors
- recover and evacuate refrigerants according to required code of practice and regulations, and recharge the system with the appropriate manufacturer refrigerant and oil type.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling air conditioning and heating, ventilation and air conditioning (HVAC) system components, including procedures for:
  - working with refrigerants at boiling point given risk of frostbite
  - working with system lubricants, including carcinogenic oils
  - handling flammable refrigerants
  - using personal protective equipment (PPE)
  - identifying and using fire safety equipment
- environmental requirements, including procedures for preventing loss of refrigerant to the atmosphere
- techniques for reading and interpreting technical information, including:

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    - refrigerant saturation temperatures in relation to ambient temperatures and changing levels of humidity
    - graphic symbols and diagrams
- principal types of vehicle air conditioning and HVAC systems, including:
    - piston, scroll and rotary vane compressors
    - electric compressors
    - variable displacement compressors
    - clutchless compressors
- principal refrigerant types and their respective operating pressures and lubricating oils, including:
    - R12
    - R134a
    - R1234yf
- air conditioning and HVAC system component overhaul procedures, including:
    - methods for cleaning and preparing air conditioning and HVAC system compressor for overhaul
    - air conditioning and HVAC system compressor dismantling procedures
    - air conditioning and HVAC system compressor inspection, measuring and evaluation procedures, including methods for measuring and calculating tolerances and clearances
    - air conditioning and HVAC compressor repair and adjustment procedures, including:
        - piston, scroll and rotary vane compressors
        - electric compressors
        - variable displacement compressors
        - clutchless compressors
    - procedures for tolerance measuring and calculating and adjusting components
- post-overhaul bench testing procedures, including:
    - use of manifold gauges and surface probe thermocouples for complete system analysis
    - analysis of system operation while using gauges, temperature probes, electrical test equipment, scan tools, oscilloscopes and other industry-relevant test equipment
- post-overhaul testing of air conditioning and HVAC systems in vehicle or machinery, including:
    - diagnostic procedures for air conditioning and HVAC systems, including:
        - accessing and interpreting diagnostic trouble codes (DTCs)
        - diagnostic flow charts
    - visual, aural and functional assessments
    - ambient temperature
    - centre vent temperature
    - condenser and suction line temperature
    - manifold gauge pressure readings
    - refrigerant leaks.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements and hold an Australian Refrigerant Council (ARC) Refrigerant Handling licence.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air conditioning and HVAC systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- Australian automotive code of practice*:* Control of refrigerant gases during manufacture, installation, servicing or de-commissioning of motor vehicle air conditioners.
- manufacturer specifications for air conditioning and HVAC system components
- two different vehicles or machinery requiring overhaul, with operational air conditioning and HVAC systems and with components specified in the performance evidence
- tools, equipment and materials appropriate for overhauling and adjusting a range of air conditioning and HVAC compressors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURETX001 Analyse and evaluate electrical and electronic faults in driveline management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate electrical and electronic faults in the embedded network driveline management systems of vehicles or machinery in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry on embedded network driveline management systems of vehicles or machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Electrical

Unit Sector

Technical - Transmission

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for driveline management system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Driveline management system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored, and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to driveline management systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised driveline management system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
	  • working with high pressure fluid.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURETX5001 Analyse and evaluate electrical and electronic faults in transmission and driveline systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURETX001 Analyse and evaluate electrical and electronic faults in driveline management systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate an electrical or electronic fault in the driveline management systems of two different vehicles or machinery
- the above faults must involve the following systems:
  - transmission
  - driveline.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in driveline management systems, including procedures for:
  - identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
  - working with high pressure fluid
- principles and processes involved in planning and implementing analysis and evaluation of electrical and electronic faults in driveline management systems
- design and planning of diagnostic procedures for faults in driveline management systems, including procedures for diagnosing:
  - electrical faults
  - electronic faults
- types, functions, operation and limitations of driveline management systems, including:
  - driveline management systems, including:

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    - clutches
    - torque converters
    - manual transmissions
    - automatic transmissions
    - drive and power take-off shafts
    - differentials
    - drivelines
  - gateway network control module:
    - bus network topography
    - associated network electronic vehicle or machinery systems
    - sensor and actuator control and monitoring systems
    - control signal circuits
- testing procedures for driveline management systems, including the use of:
  - digital multimeter
  - scan tool
  - oscilloscope
  - four-wheel dynamometer
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate electrical and electronic faults in driveline management systems
- procedures for accessing and interpreting scan tool system data, including:
  - diagnostic trouble codes (DTCs), including:
    - conditions that set the DTCs
    - conditions for running DTCs
  - live data
  - freeze frame data
  - waveforms
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to driveline management systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the driveline management systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer driveline management system specifications
- two different vehicles or machinery with driveline management system faults
- diagnostic equipment for driveline management systems
- tools, equipment and materials appropriate for analysing and evaluating driveline management systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTA001 Carry out heavy vehicle pre-repair cleaning

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to clean a heavy vehicle body and its major components before beginning repairs. It involves preparing for the task, cleaning the vehicle body and components by mechanical or chemical means, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to undertake pre-repair cleaning	1.1 Task instructions are interpreted and vehicle, area of vehicle body or components to be worked on are identified 1.2 Cleaning procedures and information are sourced and interpreted 1.3 Cleaning options are analysed and those most appropriate to the circumstances are selected 1.4 Potential hazards and risks associated with the task are identified and reported to workplace supervisor 1.5 Cleaning tools, equipment and materials are selected and checked for serviceability
2. Clean vehicle body and components	2.1 Area of vehicle body to be worked on is cleaned according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to components or systems 2.2 Vehicle components are cleaned according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 2.3 Used cleaning agents and waste materials are disposed of according to workplace procedures, and safety and environmental requirements
3. Complete work processes	3.1 Final inspection is made to ensure work meets task instructions and workplace standards 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	**Description**
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer specifications, workplace procedures, and safety and environmental requirements relating to cleaning a heavy vehicle body and major components.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to interpret volumes and calculate chemical mixing requirements for preparation of cleaning agents.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE)
	  • using cleaning tools and equipment
	  • safely handling cleaning agents
	  • controlling hazards, including hazardous materials and toxic substances
	• environmental requirements, including procedures for trapping, storing and disposing of cleaning agents and contaminants.

Unit Mapping Information

Equivalent to AURHTA1001 Carry out heavy vehicle pre-repair operations

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTA001 Carry out heavy vehicle pre-repair cleaning

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- clean three of the following heavy vehicle systems or components:
  - vehicle body
  - engine
  - transmission
  - final drive
  - steering and suspension system
  - wheels and hubs
  - chassis
  - electrical component
  - fuel system component
- use chemical cleaning when cleaning one of the above systems or components.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) relating to heavy vehicle pre-repair cleaning, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using cleaning tools and equipment
  - safely handling cleaning agents
  - controlling hazards, including hazardous materials and toxic substances

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- environmental requirements, including procedures for trapping, storing and disposing of cleaning agents and contaminants
- cleaning procedures, techniques and materials appropriate for mechanical and chemical components, and relevant to the task instructions
- protective treatment and storage procedures for cleaned heavy vehicle components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct or third-party observation of tasks.

Where assessment of competency includes third-party observation, individuals must provide evidence that links them to the heavy vehicles or components that they have cleaned before repair, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- manufacturer cleaning material specifications
- heavy vehicle systems and components specified in the performance evidence requiring pre-repair cleaning
- cleaning equipment, cleaning agents, materials and tools appropriate for pre-repair cleaning.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTA003 Remove and replace heavy commercial vehicle ancillary components and accessories

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove, replace and make adjustments to heavy commercial vehicle ancillary components and accessories. It involves preparing for the work, removing and replacing components or accessories, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and inspect ancillary components or accessories	1.1 Task requirements are determined from workshop or activity instructions 1.2 Removal and replacement procedures and information are sourced and interpreted 1.3 Potential hazards and risks associated with the task are identified and reported to workplace supervisor 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Remove and inspect ancillary components or accessories	2.1 Ancillary components or accessories are identified and removed according to manufacturer specifications and without causing damage to components or systems 2.2 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety requirements*** 2.3 Inspection findings are reported according to workplace procedures
3. Replace ancillary components or accessories	3.1 Ancillary components or accessories are replaced according to manufacturer specifications, and without causing damage to components or systems 3.2 Adjustments are made to components or accessories according to manufacturer specifications 3.3 Post-replacement testing is carried out according to workplace procedures and further adjustments are made as required
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instructions and workplace standards 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer specifications, workplace procedures and safety requirements relating to workplace activities.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE)
	  • using tools and equipment.

Unit Mapping Information

Equivalent to AURHTA2003 Remove and replace heavy commercial vehicle ancillary components and accessories

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTA003 Remove and replace heavy commercial vehicle ancillary components and accessories

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and replace three of the following heavy commercial vehicle ancillary components and accessories:
  - rear vision mirrors
  - mudguards and mudflaps
  - ancillary lighting system
  - dust deflectors
  - reflectors
  - trim
  - audio systems
  - adhesive signage and stickers
  - exhaust system ancillary components.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and replacing heavy vehicle ancillary components and accessories, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and equipment
- procedures and specifications for removing, replacing and adjusting heavy vehicle ancillary components and accessories required for the task

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- types, application and operation of specialist tools and equipment for removing and replacing heavy commercial vehicle ancillary components and accessories
- post-adjustment testing procedures for heavy commercial vehicle ancillary components and accessories.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy commercial vehicle ancillary components and accessories that they have removed and replaced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer component and accessory specifications
- heavy vehicles requiring the removal, replacement and adjustment of the ancillary components and accessories specified in the performance evidence
- tools, equipment and materials appropriate for removing and replacing heavy commercial vehicle components and accessories.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTB001 Diagnose and repair heavy vehicle air braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the air braking systems of heavy vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The air braking systems include those in agricultural machinery, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Brakes

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair air braking system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose air braking system	2.1 ***Diagnostic tests*** are carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair air braking system	3.1 ***Repair information*** is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.5 ***Post-repair testing*** is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking braking system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure braking system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use braking system diagnostic equipment and measuring equipment, such as vernier calipers, micrometers and brake drum micrometers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Diagnostic tests must include:	• friction material wear • drum brake component serviceability • disc brake component serviceability • air pressure testing.

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Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working safely with stored energy in springs and high air pressure systems
	  • managing and controlling brake dust and brake fluids
	  • removing and refitting wheel assemblies
	• environmental requirements, including procedures for trapping, storing and disposing of hazardous materials and substances released from braking systems, including brake dust and fibres.

Repair information must include procedures relating to:	• removing, replacing and adjusting system components • dismantling, repairing, reassembling and adjusting systems.
Post-repair testing must include:	• stall testing of service, park, emergency and secondary brakes • dynamic brake performance testing using approved methods or equipment.

Unit Mapping Information

Equivalent to AURHTB3001 Repair air braking systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTB001 Diagnose and repair heavy vehicle air braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in three heavy vehicle air braking systems as follows:
  - one disc braking system, in which the work must involve removing and refitting or replacing the brake actuators, disc pads and disc rotors
  - one drum braking system, in which the work must involve removing and refitting or replacing the brake actuators, brake shoes and drums
  - one air braking system, in which the work must involve removing and refitting or replacing the following:
    - air compressor, delivery and storage components
    - slack adjusters
    - pneumatic and electronic control circuits and valves.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing air braking systems, including procedures for:
  - working safely with stored energy in springs and high air pressure systems
  - managing and controlling brake dust and brake fluids
  - removing and refitting wheel assemblies
- environmental requirements, including procedures for trapping, storing and disposing of hazardous materials and substances released from braking systems, including brake dust and fibres
- Australian Design Rules ADR35 and ADR38 relating to repairing heavy vehicle brakes

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- operating principles of air braking systems and associated components, including:
  - levers
  - friction
  - pneumatics
  - electronics
- application, purpose and operation of heavy vehicle air braking systems and components, including:
  - disc braking systems
  - drum braking systems
  - air compressors, air storage, air dryers and valves
  - brake actuators
  - foot valves
  - air control valves
  - manual and automatic slack adjusters
  - trailer brake valves
  - pneumatic and electronic control circuits and valves
- diagnostic testing procedures for air braking systems, including:
  - air control system testing
  - air brake component inspection and evaluation
  - brake system stationary and mobile performance tests
- repair procedures for air braking system components, including:
  - wheel end components, including:
    - disc braking systems
    - drum braking systems
  - air compressors, air storage, air dryers and valves
  - brake actuators
  - foot valves
  - manual and automatic slack adjusters
  - trailer brake valves
  - pneumatic and electronic control circuits and valves
- post-repair testing procedures for air braking systems, including stationary and mobile performance tests.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle air braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer braking system specifications
- two different heavy vehicles with faults in the air braking systems specified in the performance evidence
- diagnostic equipment for heavy vehicle air braking systems
- Australian Design Rules ADR35 and ADR38
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle air braking systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTB002 Diagnose and repair heavy vehicle hydraulic and air over hydraulic braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the hydraulic and air over hydraulic braking systems of heavy vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The braking systems include those in agricultural machinery, heavy commercial vehicles or mobile plant machinery. The unit does not apply to hydraulic pressure brakes in agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Brakes

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair heavy vehicle hydraulic and air over hydraulic braking system	1.1 Job requirements are determined according to workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose braking system	2.1 ***Diagnostic tests*** are carried out according to manufacturer specifications, workplace procedures and ***safety and environmental requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair braking system	3.1 ***Repair information*** is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked according to manufacturer procedures 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.5 ***Post-repair testing*** is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking braking system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure braking system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use braking system diagnostic equipment and measuring equipment, such as vernier calipers, micrometers and brake drum micrometers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Diagnostic tests must include:	• friction material wear • drum brake component serviceability • disc brake component serviceability • air braking system testing • hydraulic braking system testing.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working safely with stored energy in springs and high air pressure systems
	  • managing and controlling brake dust and brake fluids
	  • removing and refitting wheel assemblies
	• environmental requirements, including procedures for trapping, storing and disposing of hazardous materials and substances released from braking systems, including brake fluids and brake dust and fibres.

Repair information must include procedures relating to:	• removing, replacing and adjusting system components • dismantling, repairing, reassembling and adjusting systems.
Post-repair testing must include:	• stall testing of service, park and secondary brakes • dynamic brake performance testing using approved methods or equipment.

Unit Mapping Information

Equivalent to AURHTB3002 Diagnose and repair heavy vehicle hydraulic braking systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTB002 Diagnose and repair heavy vehicle hydraulic and air over hydraulic braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in a heavy vehicle hydraulic braking system, including:
  - master cylinder and wheel cylinders
  - disc and drum brake wheel end components
  - parking brake
- diagnose and repair a fault in a heavy vehicle air over hydraulic braking system, including:
  - disc and drum brake wheel end components
  - air compressor, delivery and storage components
  - foot valves
  - parking brake.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing heavy vehicle hydraulic and air over hydraulic braking systems, including procedures for:
  - working safely with stored energy in springs and high air pressure systems
  - managing and controlling brake dust and brake fluids
  - removing and refitting wheel assemblies
- environmental procedures for trapping, storing and disposing of hazardous materials and substances released from braking systems, including brake fluids and brake dust and fibres

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- operating principles of heavy vehicle hydraulic braking systems and associated components, including:
  - levers
  - friction
  - pneumatics
  - hydraulics
- Australian Design Rules ADR35 and ADR38 relating to repairing heavy vehicle brakes
- application, purpose and operation of heavy vehicle hydraulic and air over hydraulic braking systems and components, including:
  - hydraulic braking systems, including:
    - disc and caliper assemblies
    - drum and lining assemblies
    - master cylinder and boosters
    - brake lines and hydraulic valves
    - load compensating valves
    - proportioning valves
  - air over hydraulic braking systems, including:
    - air storage
    - brake valves
    - air compressor
    - brake lines and valves
    - receiver drier
  - parking brake systems
- diagnostic testing procedures for heavy vehicle hydraulic and air over hydraulic braking systems, including:
  - air control system tests
  - hydraulic system component inspection and evaluation
  - air braking system component inspection and evaluation
  - brake fluid tests
  - parking brake operational tests
  - drum and disc brake operational tests
  - drum brake and shoes, disc and pad measurement and evaluation
  - stationary and mobile performance tests
- repair procedures for heavy vehicle hydraulic and air over hydraulic braking systems, including:
  - removal, replacement and adjustment procedures for hydraulic system components, including:
    - disc and caliper assemblies
    - drum and lining assemblies
    - master cylinder and boosters
    - brake lines and valves

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    - switches
  - removal, replacement and adjustment procedures for hydraulic and air over hydraulic braking system components, including:
    - brake valves
    - air compressors
    - air storage
    - brake lines and valves
    - receiver driers
- post-repair testing procedures for heavy vehicle hydraulic and air over hydraulic braking systems, including stationary and mobile performance tests.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle hydraulic and air over hydraulic braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer braking system specifications
- two heavy vehicles with the faults and braking systems specified in the performance evidence
- diagnostic equipment for heavy vehicle hydraulic and air over hydraulic braking systems
- Australian Design Rules ADR35 and ADR38
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle hydraulic and air over hydraulic braking systems.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTB003 Overhaul hydraulic and air over hydraulic braking system components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return hydraulic and air over hydraulic braking system components to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the braking system components, carrying out the overhaul procedures, reassembling and testing the braking system components, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The braking systems include those of agricultural machinery, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Brakes

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle braking system components	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate braking system and components	2.1 Braking system is dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble components	4.1 Braking system components are assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of braking system components is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and braking system components are presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for braking system components efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking braking system component specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure braking system components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed

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Skills	Description
skills to:	within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers and micrometers • use specialised braking system component overhaul equipment, such as brake discs and drum lathes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • operating specialised braking system component overhaul tools, equipment and machinery
	  • using chemicals and toxic substances
	  • operating for manual and mechanical lifting equipment
	  • working with stored energy
	• environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from braking systems.

Unit Mapping Information

Equivalent to AURHTB4003 Overhaul braking system components (heavy)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTB003 Overhaul hydraulic and air over hydraulic braking system components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul the following hydraulic and air over hydraulic braking system components:
  - two different wheel end disc and drum brake components
  - two different hydraulic system components
  - two different air system components.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- workplace health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling hydraulic and air over hydraulic braking system components, including procedures for:
  - operating specialised braking system component overhaul tools, equipment and machinery
  - using chemicals and toxic substances
  - operating manual and mechanical lifting equipment
  - working with stored energy
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from braking systems
- types, characteristics and operating principles of hydraulic and air over hydraulic braking systems and associated components, including:
  - disc and drum wheel end systems
  - hydraulic systems
  - air systems

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- braking system overhaul procedures, including:
  - methods for cleaning and preparing braking system components for overhaul
  - braking system component dismantling procedures
  - braking system component inspection, measuring and evaluation procedures, including methods for measuring and calculating tolerances and clearances
  - braking system component repair and adjustment procedures, including:
    - brake actuators
    - air compressors
    - air storage and valves
    - disc and drum wheel end components
    - slack adjusters
    - master cylinder
    - brake booster
  - component assembly procedures, including procedures for measuring and calculating tolerances, and adjusting components
- post-overhaul testing procedures for braking system components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the hydraulic and air over hydraulic braking system components that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer hydraulic and air over hydraulic braking system component specifications
- heavy vehicle braking system components specified in the performance evidence and requiring overhaul

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- tools, equipment and materials appropriate for overhauling and adjusting hydraulic and air over hydraulic braking system components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTB004 Overhaul air braking system components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return air braking system components to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the braking system components, carrying out the overhaul procedures, reassembling and testing the braking system components, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The air braking systems include those of agricultural machinery, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Brakes

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle air braking system components	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate air braking system components	2.1 Braking system components are dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble components	4.1 Air braking system components are assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of air braking system components is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and air braking system components are presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for air braking systems efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking air braking system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure air braking system components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed

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Skills	Description
skills to:	within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers and micrometers • use specialised air braking system component overhaul equipment, such as brake discs and drum lathes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • operating specialised air braking system component overhaul tools, equipment and machinery
	  • using chemicals and toxic substances
	  • operating manual and mechanical lifting equipment
	  • working with stored energy
	• environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from air braking systems.

Unit Mapping Information

Equivalent to AURHTB4004 Overhaul air braking systems and components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTB004 Overhaul air braking system components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul the following air braking system components:
  - two different wheel end disc and drum brake components
  - two different air system components.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- workplace health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling air braking system components, including procedures for:
  - operating specialised air braking system component overhaul tools, equipment and machinery
  - using chemicals and toxic substances
  - operating manual and mechanical lifting equipment
  - working with stored energy
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from air braking systems
- types, characteristics and operating principles of air braking systems and associated components
- air braking system overhaul procedures, including:
  - methods for cleaning and preparing braking system components for overhaul
  - braking system component dismantling procedures

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- braking system component inspection, measuring and evaluation procedures, including methods for measuring and calculating tolerances and clearances
- braking system component repair and adjustment procedures, including:
  - brake actuators
  - air compressors
  - air storage and valves
  - disc and drum wheel end components
  - slack adjusters
- procedures for tolerance measuring and calculating and adjusting components
- post-overhaul testing procedures for braking system components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air braking systems and components that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer air braking system and component specifications
- air braking system components specified in the performance evidence and requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting air braking system components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTB005 Analyse and evaluate faults in heavy commercial vehicle braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in heavy commercial vehicle braking systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The braking systems include those of heavy commercial vehicles and heavy trailers. This unit does not apply to agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Brakes

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for heavy commercial vehicle braking system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Braking system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to heavy commercial vehicle braking systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised heavy commercial vehicle braking system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • handling and controlling brake dust and brake fluids
	  • working with stored energy in springs, air springs, torsion bars and air storage
	• environmental requirements, including procedures for trapping, storing and disposing of brake dust and brake fluid released from braking systems.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURHTB5005 Analyse and evaluate heavy vehicle braking system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTB005 Analyse and evaluate faults in heavy commercial vehicle braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the braking systems of three different heavy commercial vehicles
- the above faults must be in two of the following braking systems:
  - pneumatic system
  - air over hydraulic system
  - hydraulic system
  - electronic system
  - auxiliary braking system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in heavy commercial vehicle braking systems, including procedures for:
  - handling and controlling brake dust and brake fluids
  - working with stored energy in springs, air springs, torsion bars and air storage
- environmental requirements, including procedures for trapping, storing and disposing of brake dust and brake fluid released from braking systems
- principles and processes involved in planning and implementing analysis and evaluation of braking system faults
- design and planning of diagnostic procedures of heavy commercial vehicle braking systems, including procedures for diagnosing:

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  - hydraulic faults
  - mechanical faults
  - pneumatic faults
  - electrical faults
- types, functions, operation and limitations of the following systems and components:
  - foundation brakes
  - friction materials
  - anti-lock braking system (ABS)
  - electronic braking system (EBS)
  - pneumatic braking system
  - pneumatic and electronic control circuits and valves
  - hydraulic braking system
  - air over hydraulic braking system
  - heavy trailer braking system
  - auxiliary braking systems (compression and transmission retarders)
- testing procedures for heavy commercial vehicle braking systems, including:
  - brake timing and balancing
  - air supply performance
  - vehicle stopping distance
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in braking systems
- procedures for documenting and reporting the analysis and evaluation process required to analyse and evaluate faults in braking systems
- requirements of Australian Design Rules (ADRs) relating to heavy commercial vehicle braking systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy commercial vehicle braking systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer heavy commercial vehicle braking system specifications
- three different heavy commercial vehicles with faults in the braking systems specified in the performance evidence
- diagnostic equipment for heavy commercial vehicle braking systems
- tools, equipment and materials appropriate for analysing and evaluating heavy commercial vehicle braking systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTD001 Inspect heavy commercial vehicle suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect heavy commercial vehicle suspension systems according to manufacturer specifications. It involves preparing for the task, inspecting the system, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect suspension system	1.1 Task instruction is interpreted and vehicle to be worked on is identified 1.2 Inspection information is sourced and interpreted 1.3 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect suspension system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer and workshop literature when seeking inspection procedures and specifications relating to suspension systems.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.

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Skills	Description
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to compare component wear against manufacturer specifications.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with stored energy in springs, air springs and torsion bars
	  • lifting and supporting vehicles.

Unit Mapping Information

Equivalent to AURHTD2001 Inspect and service heavy commercial vehicle suspension system

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTD001 Inspect heavy commercial vehicle suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect the front and rear suspension systems of one heavy commercial vehicle, including:
  - springs
  - spring dampers
  - arms, mountings and bushings
  - vehicle curb height.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- workplace health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting heavy commercial vehicle suspension systems, including procedures for:
  - working with stored energy in springs, air springs and torsion bars
  - lifting and supporting vehicles
- identification and function of major suspension system components, including:
  - airbag, coil spring, leaf spring and torsion bar
  - spring dampers
  - pneumatic, mechanical and rubber suspension
  - lateral and longitudinal arms
  - self-levelling device, ride control, height control
- basic operation of suspension systems, including:
  - leaf spring

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  - equaliser beam
  - rubber block
  - torsion bar
  - air spring
- inspection procedures for suspension systems, including front and rear suspension.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle suspension systems that they have inspected, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer suspension system specifications
- one heavy commercial vehicle with front and rear suspension systems
- tools, equipment and materials appropriate for inspecting heavy commercial vehicle suspension systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTD002 Diagnose and repair heavy commercial vehicle steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the steering systems of heavy commercial vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The steering systems include those in heavy commercial vehicles. This unit does not apply to agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes**.**	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair a heavy commercial vehicle steering system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose steering system	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair steering system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked according to manufacturer procedures 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking steering system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• understand steering system information in degrees, and metric and imperial units of measurement • measure steering system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use measuring equipment, such as tape measures, rulers, vernier calipers, micrometers and hydraulic gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with high pressure steering systems • environmental requirements, including procedures for trapping,

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	storing and disposing of power steering hydraulic fluid released from steering systems.

Unit Mapping Information

Equivalent to AURHTD3002 Repair steering systems (heavy vehicle)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTD002 Diagnose and repair heavy commercial vehicle steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in one of the following heavy commercial vehicle steering systems:
  - electronically assisted steering
  - hydraulic power assisted steering
- diagnose and repair a fault in three of the following heavy commercial vehicle steering components:
  - power steering pump
  - hydraulic and electronic valves
  - tie rods and linkages
  - king pin
  - front wheel bearings.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing heavy commercial vehicle steering systems, including procedures for working with high pressure steering systems
- environmental requirements, including procedures for trapping, storing and disposing of power steering hydraulic fluid released from steering systems
- operating principles of heavy commercial vehicle steering systems and associated components, including:
  - manual steering systems

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    - power assisted steering systems
- application, purpose and operation of heavy commercial vehicle steering systems and components, including:
    - manual steering systems, including:
        - steering box
        - steering column
        - tie rods and linkages
        - king pins
        - wheel bearings
    - hydraulic power assisted steering systems, including:
        - integral piston steering box
        - power steering pump
        - hydraulic and electronic valves
    - twin axle steering systems
    - electronically assisted steering systems
- identification, function and basic operating principles of steering angles, including:
    - Ackermann principle of steering
    - toe-in and toe-out
    - toe-out on turns
    - caster
    - camber
    - steering axis inclination
- diagnostic testing procedures for heavy commercial vehicle steering systems, including:
    - operational testing
    - hydraulic steering system testing
    - electronic and load sensing steering testing
    - analysing component wear analysis
- repair procedures for heavy commercial vehicle steering system components, including:
    - power steering pump
    - steering box
    - steering column
    - king pin
    - electronically assisted steering
    - tie rods and linkages
    - wheel bearings
- post-repair testing procedures for heavy commercial vehicle steering systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy commercial vehicle steering systems or components that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer steering system specifications
- heavy commercial vehicle with faults in the power assisted steering systems and components specified in the performance evidence
- diagnostic equipment for heavy commercial vehicle steering systems
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle steering systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTD003 Diagnose and repair heavy commercial vehicle suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the suspension systems of heavy commercial vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The suspension systems include those in heavy commercial vehicles. This unit does not apply to agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair heavy vehicle suspension system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose suspension system	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair suspension system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked according to manufacturer procedures 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking suspension system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure suspension system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use measuring equipment, such as tape measures, rulers and vernier calipers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with stored energy in springs, air springs, accumulators and torsion bars
	  • lifting, supporting and manual handling heavy vehicle suspension systems.

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Unit Mapping Information

Equivalent to AURHTD3003 Repair suspension systems (heavy vehicle)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTD003 Diagnose and repair heavy commercial vehicle suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in:
  - the following two heavy commercial vehicle suspension systems:
    - leaf spring suspension
    - air spring suspension
  - one of the following heavy commercial vehicle suspension systems:
    - equaliser beam suspension
    - torsion bar suspension
    - electronically controlled suspension.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing heavy vehicle suspension systems, including procedures for:
  - working with stored energy in springs, air springs, accumulators and torsion bars
  - lifting, supporting and manual handling heavy vehicle suspension systems
- operating principles of heavy vehicle suspensions and associated components, including:
  - rigid and independent suspensions
  - sprung and unsprung mass
  - ride and curb height
  - spring dampers

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    - spring types
- application, purpose and operation of heavy vehicle suspension systems and components, including:
    - air spring suspension
    - leaf spring suspension, including:
        - front suspension
        - rear suspension, including single and tandem axle
    - equaliser beam suspension
    - torsion bar suspension
    - electronically controlled suspension
- diagnostic testing procedures for heavy vehicle suspension systems, including:
    - component wear analysis
    - checking axle alignment
    - checking fluid leaks
    - checking air leaks
    - checking ride and curb height
    - control system tests
- repair procedures for heavy vehicle suspension systems, including procedures for:
    - removing, repairing and replacing suspension components, and springs and spring dampers
    - aligning axles
- post-repair testing procedures for heavy vehicle suspension systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer suspension system specifications
- heavy commercial vehicles with faults in the different suspension systems listed in the performance evidence
- diagnostic equipment for heavy commercial vehicle suspension systems
- tools, equipment and materials appropriate for repairing and adjusting heavy commercial vehicle suspension systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTD004 Carry out heavy vehicle wheel alignment operations

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out heavy vehicle wheel alignment operations. It involves identifying and confirming work requirements, preparing for the work, carrying out pre-alignment inspection and wheel alignment, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The wheel alignment operations include those of agricultural machinery, heavy commercial vehicles or mobile plant machinery. The unit does not apply to light vehicles, light commercial vehicles or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Carry out wheel alignment pre-checks	1.1 Job requirements are determined from workplace instructions 1.2 Alignment pre-check information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Alignment pre-checks of vehicle wheels, steering and suspension condition are carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 1.5 Faults are identified and reported according to workplace procedures as necessary
2. Carry out vehicle wheel alignment activities	2.1 Vehicle wheel alignment specifications are sourced and interpreted 2.2 Wheel alignment measuring equipment is connected to vehicle according to manufacturer specifications and workplace procedures 2.3 Wheel alignment is carried out without causing damage to components or systems, and readings are recorded 2.4 Corrective adjustments are carried out according to workplace procedures and safety requirements, and within manufacturer specifications 2.5 Wheel alignment is re-checked to confirm accuracy of adjustments 2.6 Post-adjustment wheel alignment readings are recorded and reported according to workplace procedures
3. Complete work process	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret safe operating procedures for wheel alignment equipment from workplace signs and procedures and manufacturer specifications • interpret information from manufacturer specifications and workshop literature when seeking vehicle wheel alignment specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting findings, making recommendations, and recording vehicle pre-alignment checks and pre- and post-wheel alignment readings.
Numeracy skills to:	• measure steering and suspension system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • understand measurements in metric and imperial units of measurement and angles in degrees.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring wheel alignment equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS), occupational health and safety (OHS) requirements, including procedures for raising and supporting heavy vehicles or machinery.

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Unit Mapping Information

Equivalent to AURHTD3004 Carry out wheel alignment operations (heavy vehicle)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTD004 Carry out heavy vehicle wheel alignment operations

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- align the wheels on at least three different heavy vehicles, in which the work must involve measuring, recording and adjusting the following angles to manufacturer specifications:
  - camber
  - caster
  - king pin inclination (KPI)
  - toe (toe-in and toe-out)
  - toe-out on turns.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to heavy vehicle wheel alignment operations, including procedures for raising and supporting heavy vehicles or machinery
- application, purpose and operating principles of steering geometry and wheel alignment angles, including:
  - Ackermann principle of steering
  - camber
  - caster
  - KPI
  - toe-in and toe-out
  - toe-out on turns
  - steering axis inclination

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    - two wheel and twin four wheel steer
- vehicle pre-alignment inspection procedures, including:
    - analysing tyre wear
    - inflating tyre
    - adjusting wheel bearing
    - inspecting steering and suspension
    - determining wheel run-out
    - determining vehicle height
    - checking chassis and axle alignment
- wheel alignment equipment types, application and operation
- procedures for measuring and adjusting steering angles, including:
    - camber
    - caster
    - toe-in and toe-out
    - toe-out on turns
- post-wheel alignment testing procedures for heavy vehicles.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle wheel alignments that they have carried out, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer wheel alignment specifications
- three different heavy vehicles requiring wheel alignment
- wheel alignment equipment for heavy vehicles

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- tools, equipment and materials appropriate for carrying out wheel alignment operations on heavy vehicles.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTD005 Analyse and evaluate faults in heavy commercial vehicle steering and suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in heavy commercial vehicle steering and suspension systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The steering and suspension systems include those of heavy commercial vehicles or heavy trailers. This unit does not apply to agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for heavy commercial vehicle steering or suspension systems are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Steering or suspension system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to heavy commercial vehicle steering and suspension systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

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Skills	Description
Technology skills to:	• use specialised heavy commercial vehicle steering and suspension system diagnostic equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with:
	  • stored energy in springs, air springs, torsion bars and air storage
	  • high pressure and high temperature steering system fluids
	• environmental requirements, including procedures for trapping, storing and disposing of hydraulic fluid released from steering and suspension systems.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURHTD5005 Analyse and evaluate heavy vehicle steering and suspension system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTD005 Analyse and evaluate faults in heavy commercial vehicle steering and suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - steering system of a heavy commercial vehicle
  - suspension system of a different heavy commercial vehicle
  - steering or suspension system of a third heavy commercial vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in heavy commercial vehicle steering and suspension systems, including procedures for working with:
  - stored energy in springs, air springs, torsion bars and air storage
  - high pressure and high temperature steering system fluids
- environmental requirements, including procedures for trapping, storing and disposing of hydraulic fluid released from steering and suspension systems
- principles and processes involved in planning and implementing analysis and evaluation of steering and suspension system faults
- design and planning of diagnostic procedures of heavy commercial vehicle steering and suspension system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - pneumatic faults

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    - electrical faults
- procedures for analysing and evaluating heavy commercial vehicle steering and suspension system faults, including:
    - system failure analysis
    - component failure analysis
- types, functions, operation and limitations of the following systems:
    - steering system, including:
        - steering system theory, including steering angles
        - mechanical steering system components
        - power assisted steering system
    - suspension system, including:
        - spring suspension
        - air suspension
    - influences of trailer operations on the heavy commercial vehicle:
        - steering performance
        - suspension performance
- associated vehicle systems and their impact on steering and suspension system operation, including trailers and loads
- testing procedures for heavy commercial vehicle steering and suspension systems, including:
    - steering component wear
    - power assisted steering pressures and operation
    - suspension component wear
    - wheel and chassis alignment
    - axle parallelism
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in steering and suspension systems
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to heavy commercial vehicle steering and suspension systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy commercial vehicle steering and suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer heavy commercial vehicle steering and suspension system specifications
- three different heavy commercial vehicles with steering and suspension system faults
- diagnostic equipment for heavy commercial vehicle steering and suspension systems
- tools, equipment and materials appropriate for analysing and evaluating heavy commercial vehicle steering and suspension systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTE001 Remove and install heavy vehicle engine assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and install engine assemblies fitted to heavy vehicles. It involves preparing for the task, removing and installing the engine assembly, performing post-installation testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The heavy vehicle engines include those of agricultural machinery, heavy commercial vehicles, marine vessels or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Engines

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove heavy vehicle engine assembly	1.1 Job requirements are determined from workplace instructions 1.2 Engine removal and installation procedures and information are sourced and interpreted 1.3 Engine removal and installation options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment are selected and checked for serviceability
2. Remove engine assembly	2.1 Engine assembly is removed according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to components or systems 2.2 Engine assembly, components and systems are inspected and faults are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Install engine assembly	3.1 Installation options are analysed and those most appropriate to the circumstances are selected 3.2 Engine assembly is installed according to manufacturer specifications and workplace procedures, and without causing damage to components or systems 3.3 ***Post-installation checks, adjustments and tests*** are carried out according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking engine removal and installation specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording parts and material used.
Oral communication skills to:	• clarify workplace instructions and determine job requirements.
Numeracy skills to:	• measure components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, tolerances and deviations from manufacturer specifications • calculate and adjust lubricant and coolant volumes.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • isolating and stabilising vehicle or machinery
	  • using vehicle or machinery lifting devices and supporting equipment
	  • working with compression ignition engines
	• environmental requirements, including procedures for trapping, storing and disposing of oils, fluids, coolants and gases released during removal and installation of engine assemblies.

Post-installation checks, adjustments and tests must include:	• pre-start procedures • operational testing and run-in procedures • engine adjustments and cylinder head bolt retensioning as required

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	• throttle adjustments • coolant adjustments • ancillary engine systems.

Unit Mapping Information

Equivalent to AURHTE2001 Remove and install heavy vehicle engine assemblies

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTE001 Remove and install heavy vehicle engine assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and install two heavy vehicle engines, in which the work must involve:
  - removing and refitting ancillary components and systems
  - adjusting oil and fluid levels
  - post-installation adjustments
  - post-installation testing.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removal and installation of heavy vehicle engines, including:
  - isolating and stabilising vehicle or machinery
  - using vehicle or machinery lifting devices and supporting equipment'
  - working with compression ignition engines
- environmental requirements, including procedures for trapping, storing and disposing of oils, fluids, coolants and gases released during removal and installation of engine assemblies
- methods of disconnecting and reconnecting related systems, including:
  - air conditioning system
  - cooling system
  - electrical systems
  - exhaust system
  - fuel system

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  - power steering system
  - hydraulic system
  - transmission systems, including:
    - automatic transmission
    - manual transmission
- removal procedures for heavy vehicle engine assemblies, including:
  - correct use of engine lifting devices and supporting equipment
  - item tagging procedures
  - methods for correctly disposing of hazardous substances
- installation procedures for heavy vehicle engine assemblies
- post-installation testing and adjustment procedures for heavy vehicle engine assemblies, including:
  - engine pre-start procedures
  - operational testing and run-in procedures
  - engine adjustments and cylinder head bolt retensioning as required
  - throttle adjustments
  - coolant adjustments
  - ancillary engine systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle engine assemblies that they have removed and installed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications

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- two different heavy vehicles requiring removal and installation of engine assemblies
- tools, equipment and materials appropriate for removing and replacing heavy vehicle engines, including engine lifting devices and supporting equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTE002 Diagnose and repair heavy vehicle compression ignition engines

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in heavy vehicle compression ignition engines. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The compression ignition engines include those in agricultural machinery, heavy commercial vehicles, mobile plant machinery or marine vessels.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Engines

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair heavy vehicle compression ignition engine	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose engine	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures, and environmental and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair engine	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked according to manufacturer procedures 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and engine or vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking engine system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications • interpret specialised measurement and calibration equipment scales.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use compression ignition engine test and diagnosis equipment • use precision measuring equipment, such as micrometers and dial bore gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:

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	• isolating and stabilising heavy vehicles or machines • lifting and supporting heavy vehicle compression ignition engines • operating compression ignition engines.
Environmental requirements must include:	• procedures for trapping, storing and disposing of oil and fluid released from compression ignition engines.

Unit Mapping Information

Equivalent to AURHTE3002 Repair engines and associated engine components (heavy vehicle)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTE002 Diagnose and repair heavy vehicle compression ignition engines

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in two different heavy vehicle compression ignition engines, including diagnosing and repairing a fault in:
  - an engine cylinder head, which must include removing the cylinder head from the engine
  - an engine bottom end, which must include removing the crankshaft, pistons and connecting rods from the engine
- dismantle and reassemble one of the above compression ignition engines, ensuring that engine is running at the end of the repair.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing heavy vehicle compression ignition engines, including procedures for:
  - isolating and stabilising heavy vehicles or machines
  - lifting and supporting heavy vehicle compression ignition engines
  - working with compression ignition engines
- environmental requirements, including procedures for trapping, storing and disposing of oil and fluid released from compression ignition engines
- operating principles of heavy vehicle compression ignition engines and associated components, including:
  - combustion, including:

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    - combustion cycle
    - swept volume and engine volume
    - compression ratio
    - valve timing
  - engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
  - torque and horsepower, including brake horsepower
- application, purpose and operation of heavy vehicle compression ignition engines and components, including:
  - lubrication system, cylinder blocks, cylinder liners, pistons, cylinder heads, combustion chambers, inlet and exhaust manifolds, connecting rods, crankshafts, pistons, piston rings, gudgeon pins, camshafts, timing gears, vibration dampers and flywheels
- diagnostic testing procedures for heavy vehicle compression ignition engines, including:
  - engine compression tests
  - cylinder leakage tests
  - oil pressure tests
  - source of fluid leak diagnosis
  - exhaust smoke diagnosis
  - abnormal engine noise diagnosis
- dismantling, inspection and reassembly procedures for heavy vehicle compression ignition engines, including procedures for:
  - measuring clearances and tolerances, including:
    - crankshaft and camshaft bearings and journals
    - main bearing and connecting rod tunnels
    - cylinder bores and pistons
    - liner depths and protrusions
    - cylinder heads
  - inspecting components
- repair procedures for heavy vehicle compression ignition engines, including procedures for removing and refitting the:
  - cylinder head
  - piston and connecting rod
  - crankshaft
  - cylinder liner
- post-repair testing procedures for heavy vehicle compression ignition engines.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle compression ignition engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- two different heavy vehicle compression ignition engines with faults
- diagnostic equipment for heavy vehicle compression ignition engines
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle compression ignition engines.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTE004 Analyse and evaluate faults in heavy commercial vehicle engine and fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in heavy commercial vehicle engine and fuel systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The engine and fuel systems include those of heavy commercial vehicles. This unit does not apply to agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Engines

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for heavy commercial vehicle engine or fuel system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Engine or fuel system and components are prepared for the diagnostic process
3. Carry out analysis and evaluation	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to heavy commercial vehicle engine and fuel systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised heavy commercial vehicle engine and fuel system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with high fuel pressures • environmental requirements, including procedures for containing and handling fluids released from engine and fuel systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURHTE5004 Analyse and evaluate heavy vehicle engine and fuel system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTE004 Analyse and evaluate faults in heavy commercial vehicle engine and fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - engine system of a heavy commercial vehicle
  - fuel system of a different heavy commercial vehicle
  - engine or fuel system of a third heavy commercial vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in heavy commercial vehicle engine and fuel systems, including procedures for working with high fuel pressures
- environmental requirements, including procedures for containing and handling fluids released from engine and fuel systems
- principles and processes involved in planning and implementing analysis and evaluation of engine and fuel system faults
- design and planning of diagnostic procedures of heavy commercial vehicle engine and fuel system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - electrical faults
- procedures for analysing and evaluating heavy commercial vehicle engine and fuel system faults, including:
  - system failure analysis

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    - component failure analysis
- types, functions, operation and limitations of the following systems:
    - engine and components
    - fuel system and components
- impact of other associated vehicle systems on engine and fuel system operation, including:
    - engine electrical system and components
    - intake system and components
    - exhaust system and components
    - lubrication system and components
    - cooling system and components
- testing procedures for heavy commercial vehicle engine and fuel systems, including:
    - engine wear analysis
    - engine performance
    - exhaust gas analysis
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in engine and fuel systems
- procedures for documenting and reporting the system analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to heavy commercial vehicle engine and fuel systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy commercial vehicle engine and fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- manufacturer heavy commercial vehicle engine and fuel system specifications
- three different heavy commercial vehicles with engine or fuel system faults
- diagnostic equipment for heavy commercial vehicle engine and fuel systems
- tools, equipment and materials appropriate for analysing and evaluating heavy commercial vehicle engine and fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTF001 Inspect heavy commercial vehicle fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect heavy commercial vehicle fuel systems and components according to manufacturer specifications. It involves preparing for the task, inspecting the system, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Fuel Systems

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect fuel system and components	1.1 Task instruction is interpreted and vehicle to be worked on is identified 1.2 Inspection information is sourced and interpreted 1.3 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect fuel system and components	2.1 Fuel system and components are inspected according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer and workshop literature when seeking inspection procedures and specifications relating to fuel systems.

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Skills	Description
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with: • high pressure diesel fuel systems • flammable fuels • running engines and exhaust gases.

Unit Mapping Information

Equivalent to AURHTF2001 Inspect heavy commercial vehicle fuel systems and components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTF001 Inspect heavy commercial vehicle fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect one heavy commercial vehicle fuel system and components, including:
  - fuel tanks and fittings
  - fuel lines
  - fuel filters
  - fuel pumps
  - fuel injectors
  - water separators.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting heavy commercial vehicle fuel systems, including procedures for working with:
  - high pressure diesel fuel systems
  - flammable fuels
  - running engines and exhaust gases
- identification, function and basic operation of heavy vehicle fuel systems and components, including:
  - fuel tanks and fittings
  - fuel lines
  - fuel filters

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  - fuel pumps
  - fuel injectors
  - water separators
- inspection procedures for heavy commercial vehicle fuel systems and components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle fuel systems and components that they have inspected, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer fuel system specifications
- one heavy commercial vehicle with fuel system and components
- tools, equipment and materials appropriate for inspecting heavy commercial vehicle fuel systems and components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTF002 Diagnose and repair heavy vehicle diesel fuel injection systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the diesel fuel injection systems of heavy vehicles and machinery. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The diesel fuel injection systems include those in agricultural machinery, heavy commercial vehicles, marine vessels or mobile plant machinery. The unit does not apply to electronic compression ignition engine management systems.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Fuel Systems

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair diesel fuel injection system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose diesel fuel injection system	2.1 Engine tune adjustments are checked and rectified as required according to manufacturer specifications and workplace procedures 2.2 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures, and environmental and ***safety requirements*** 2.3 Faults are identified from diagnostic test results and causes of faults are determined 2.4 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair diesel fuel injection system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked according to manufacturer procedures 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and system or vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking fuel injection system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure diesel fuel injection system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Technology skills to:	• use test and diagnosis equipment such as:
	  • vacuum and pressure gauges
	  • laptop/scan tool diagnostic equipment
	  • temperature gauge
	• use precision measuring equipment, such as micrometers and dial indicator gauges.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with:
	  • high fuel pressures
	  • stored fuel pressures
	  • high voltage diesel fuel injectors
	  • engine start-up and shut-down.

Environmental requirements must include:	• procedures for trapping, storing and disposing of diesel fuel released from injection systems.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTF002 Diagnose and repair heavy vehicle diesel fuel injection systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in two different heavy vehicle diesel fuel injection systems, completing the following with each system:
  - testing the low pressure fuel supply
  - removing and refitting a low pressure fuel pump
  - removing, refitting and timing a diesel high pressure pump
  - removing, refitting and testing injectors
  - bleeding a diesel fuel injection system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing vehicle diesel fuel injection systems, including procedures for:
  - working with:
    - high fuel pressures
    - stored fuel pressures
    - high voltage diesel fuel injectors
  - engine start-up and shut-down
- environmental requirements, including procedures for trapping, storing and disposing of diesel fuel released from injection systems
- operating principles of diesel fuel injection systems and associated components, including:
  - phases of combustion

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    - composition of diesel fuel
- application, purpose and operation of diesel fuel injection systems and components, including:
    - low pressure fuel supply systems, including:
        - fuel pumps
        - filters and separators
    - high pressure diesel fuel injection systems, including:
        - distributor type injection pumps
        - in-line injection pumps
        - electronic unit injection (EUI)
        - hydraulic electronic unit injection (HEUI)
        - high pressure injection (HPI)
        - injectors
- diagnostic testing procedures for diesel fuel injection systems, including:
    - assessing exhaust smoke
    - testing low pressure fuel systems
    - testing injector opening pressure, back leakage, nozzle leakage and spray pattern
    - assessing air induction systems
    - measuring individual cylinder exhaust temperature to determine underperforming cylinders
- repair procedures for diesel fuel injection systems, including procedures for:
    - dismantling, cleaning, adjusting and reassembling conventional injectors
    - removing, installing and timing high pressure injection pumps
    - adjusting and tuning mechanical unit injection systems
    - bleeding fuel systems
- post-repair testing procedures for diesel fuel injection systems, including procedures for:
    - checking fuel system leakage
    - assessing engine performance.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle diesel fuel injection systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer heavy vehicle diesel fuel injection system specifications
- two different heavy vehicles with faults in their diesel fuel injection systems
- diagnostic equipment for diesel fuel injection systems
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle diesel fuel injection systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTJ001 Inspect heavy commercial vehicle wheels and tyres

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect heavy commercial vehicle wheels and tyres according to manufacturer specifications. It involves preparing for the task, inspecting the wheels and tyres, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Wheels and Tyres

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect heavy commercial vehicle wheels and tyres	1.1 Task instruction is interpreted and wheels and tyres to be worked on are identified 1.2 Inspection information is sourced and interpreted 1.3 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect wheel and tyre assemblies	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle or wheels and tyres are presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer and workshop literature when seeking inspection procedures and specifications relating to wheels and tyres.

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Skills	Description
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• measure tread depth for comparison to manufacturer specifications • measure tyre inflation pressures.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with:
	  • high air pressure
	  • tyres and split and multi-piece wheel rims.

Unit Mapping Information

Equivalent to AURHTJ1001 Inspect heavy commercial vehicle wheels and tyres

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTJ001 Inspect heavy commercial vehicle wheels and tyres

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect two front and two rear wheels and tyres of a heavy commercial vehicle, including:
  - wheels
  - wheel attachments
  - tyre condition
  - inflation fittings.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) occupational health and safety (OHS) procedures, equipment, material and personal safety requirements relating to inspecting heavy commercial vehicle wheels and tyres, including procedures for working with:
  - high air pressure
  - tyres and split and multi-piece wheel rims
- identification and function of wheels, rims and tyres, including:
  - types of rims and wheels
  - tyre construction
  - tyre coding
  - tyre inflation
  - wheel and rim attachments
- inspection procedures for heavy commercial vehicle wheels and tyres, including:
  - tyre inflation

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- tyre tread depth
- flat spots
- cuts and damage
- sidewall condition
- abnormal tyre wear patterns
- wheel and rim condition
- wheel and rim attachments.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy commercial vehicle wheels and tyres that they have inspected e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer wheel and tyre specifications
- heavy commercial vehicle wheels and tyres as specified in the performance evidence n
- tools, equipment and materials appropriate for inspecting heavy commercial vehicle wheels and tyres.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTJ002 Select heavy vehicle tyres, wheels and rims for specific applications

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to select heavy vehicle tyres, wheels and rims to suit specific applications. It involves identifying and confirming work requirements; preparing for the work; selecting tyres, wheels and rims; and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The tyres, wheels and rims include those of agricultural machinery, forklifts, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Wheels and Tyres

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to select tyres, wheels and rims for specific applications	1.1 Job requirements are determined from workplace instructions 1.2 ***Tyre, wheel and demountable rim*** information is sourced and interpreted 1.3 Options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed
2. Select tyres, wheels and rims for specific applications	2.1 Tyre, wheel and rim options are analysed to identify technical compliance and economic benefits 2.2 Tyres, wheels and rims are selected according to manufacturer specifications, workplace procedures, relevant Australian Design Rules, and customer requirements
3. Complete work processes	3.1 Selection is provided to appropriate personnel or customer as required and according to workplace procedures 3.2 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer specifications and workshop literature when seeking tyre, wheel and rim specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation, making recommendations regarding selected tyres, wheels and rims.
Numeracy skills to:	• interpret numerical information when selecting tyres, wheels and rims • understand both metric and imperial units of measurement.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tyre, wheel and demountable rim must include:	• tubeless and tubed tyres • bias ply and radial ply tyres • demountable rims • disc wheels • tyre tread designs.

Unit Mapping Information

Equivalent to AURHTJ2002 Select heavy vehicle tyres and rims for specific applications

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTJ002 Select heavy vehicle tyres, wheels and rims for specific applications

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- select the tyres, wheels and rims for four different heavy vehicles to suit specific customer requirements, which must involve accessing and interpreting information in manufacturer specifications relating to the selection.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- Australian Design Rules relating to heavy vehicle tyres and rims
- heavy vehicle tyre fitment guide
- heavy vehicle tyre, wheel and demountable rim assembly terminology and codes
- heavy vehicle tread patterns, and tyre, wheel and rim assembly types
- specific tyre applications for varying terrain, soils and weather conditions.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle tyres, wheels and rims that they have selected, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- vehicle manufacturer tyre, wheel and rim specifications and tyre, wheel and rim fitment guide
- Australian Design Rules relating to heavy vehicle tyres, wheels and rims
- four different heavy vehicles for the selection of tyres, wheels and rims
- equipment and material appropriate for selecting heavy vehicle tyres, wheels and rims for specific applications.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTJ005 Identify and apply heavy vehicle pneumatic wheeled traction performance enhancement systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify and apply pneumatic wheeled traction performance enhancement systems in heavy vehicles. It involves identifying and confirming work requirements, preparing for the work, identifying and applying ballasting, chains, weights, inflation levels and tyre tread designs, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The traction systems include those of agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Wheels and Tyres

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify traction performance enhancement systems	1.1 Job requirements are determined from workplace instructions 1.2 Wheeled traction system information is sourced and interpreted 1.3 Options are analysed and those most appropriate to the circumstances are selected 1.4 Technical requirements for traction performance enhancement are identified and support equipment is identified and prepared 1.5 Hazards associated with the work are identified and risks are managed 1.6 Tools, materials and required lifting equipment are selected and checked for serviceability
2. Apply a traction performance enhancement system	2.1 Wheeled traction performance enhancement is applied according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Wheel adjustments made during the traction enhancement comply with manufacturer specifications
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use, including protective guards, safety features and cowlings 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Reading skills to:	• interpret information from manufacturer specifications and workshop literature relating to heavy vehicle pneumatic wheeled traction performance enhancement systems.
Writing skills to:	• legibly and accurately fill out workplace documentation, making recommendations, and recording parts and material used.
Numeracy skills to:	• measure traction performance enhancement components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • interpret pressure gauge scales.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• conduct performance testing of components, systems and equipment • use measuring equipment, including scales, pressure gauges and tape measuring devices.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • manually handling heavy vehicle traction performance enhancement systems
	  • inflating tyres safely
	  • tagging out and isolating machines
	  • wheel chocking.

Unit Mapping Information

Equivalent to AURHTJ3005 Identify and apply pneumatic wheeled traction performance enhancement systems (heavy vehicle)

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTJ005 Identify and apply heavy vehicle pneumatic wheeled traction performance enhancement systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- identify and apply heavy vehicle pneumatic wheeled traction performance enhancement systems on at least two different heavy vehicles or machinery, in which the work must involve:
  - identifying and applying traction performance enhancement systems that suit the load and weight distribution, and soil and terrain conditions
  - complying with manufacturer specifications and workplace procedures in the selection and application of the systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to traction performance enhancement systems, including procedures for:
  - manually handling the systems
  - inflating tyres safely
  - tagging out and isolating machines
  - wheel chocking
- traction performance enhancement systems appropriate to the following operating conditions:
  - soil and terrain condition
  - load and weight distribution

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- application, purpose and operation of traction performance enhancement systems, including:
  - ballasting
  - chains, including chain tensioning equipment
  - weights
  - inflation
  - tread pattern variations
- post-fitting testing procedures for wheeled traction performance enhancement systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle or machinery pneumatic wheeled traction performance enhancement systems that they have applied, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer wheeled traction performance enhancement system specifications
- two different heavy vehicles or machinery for applying wheeled traction performance enhancement systems
- tools, equipment and materials appropriate for applying wheeled traction performance enhancement systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTJ007 Remove, inspect, repair and refit industrial tyres and tubes

Modification History

Not applicable.

Application

This unit describes the performance outcomes required to remove and refit tyres and tubes from the wheels and rims of industrial equipment. It involves identifying and confirming work requirements, preparing for the work, inspecting, repairing and refitting the tyres and tubes, and completing workplace processes and documentation.

It applies to those who fit tyres to wheel assemblies and rim assemblies in the automotive industrial sector.

Licensing, legislative, regulatory, Australian standards or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Technical - Wheels and Tyres

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare to remove, repair and refit industrial tyres and tubes	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret tyre and tube remove, inspect, repair and refit information 1.3 Identify hazards and environmental issues, assess potential risks, and implement control measures in line with workplace policies 1.4 Select tools, equipment and materials and check for serviceability

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element.
2. Remove and inspect tyres, tubes and wheels	2.1 Remove tyres and tubes from wheels according to manufacturer procedures, workplace procedures and safety and environmental requirements 2.2 Inspect tyres, tubes, wheels or rims according to manufacturer specifications and workplace procedures 2.3 Report inspection findings and make recommendations for necessary repairs according to workplace procedures
3.Repair and refit tyres and tubes	3.1 Analyse repair options and select those most appropriate to the circumstances according to workplace procedures 3.2 Repair tyres and tubes according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Mount tyre to wheel or rim according to manufacturer specifications and workplace procedures without causing damage to components or systems 3.4 Check assembled wheel for serviceability and correct assembly, and inflate according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Complete final inspection to ensure work meets workplace expectations and assembled wheel is presented ready for use 4.2 Clear work area and dispose of waste or recycle materials according to workplace procedures 4.3 Examine and store tools and equipment according to workplace procedures 4.4 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of information • recognise and adapt to different workplace tyre management

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Skills	Description
	systems.
Reading skills to:	• interpret information from manufacturer procedures when seeking tyre and tube repair procedures and specifications.
Writing skills to:	• legibly and accurately complete workplace documentation, making repair recommendations, and recording parts and material used.
Numeracy skills to:	• interpret numerical information when repairing tyres and tubes • understand both metric and imperial units of measurement.
Technology skills to:	• operate tyre changing tools and equipment • operate tyre and tube repair equipment.

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURHTJ007 Remove, inspect, repair and refit industrial tyres and tubes	N/A	New unit	N/A

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTJ007 Remove, inspect, repair and refit industrial tyres and tubes

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate removing, inspecting, repairing and refitting industrial equipment tyres and tubes that safely follows workplace procedures to meet required outcomes.

This includes removing, inspecting, repairing and refitting:

- two tyres and tubes fitted to split or multi-piece wheels
- two tyres and tubes fitted to drop centre wheels.

Whilst completing the above work, individuals must demonstrate they can:

- select appropriate tools, equipment and materials
- safely remove tyres and tubes from wheels according to manufacturer specifications and workplace procedures
- mount tyre to wheel or rim without causing damage to components or systems and check assembled wheel for serviceability and correct assembly
- conduct post-work inspection and complete work processes, including storage of equipment and documentation.
-

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures for removing, inspecting, repairing and refitting industrial equipment tyres and tubes, including:

- how to locate and interpret manufacturers specifications, and workplace procedures for removing, inspecting, repairing and fitting industrial tyres and tubes
- work health and safety (WHS) relating to industrial tyres and tubes, including procedures for:
  - deflating and inflating tyres on industrial equipment

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    - raising and supporting machinery on unstable surfaces
    - manual handling when lifting wheel assemblies
    - removing, repairing and refitting tyres and tubes
- environmental requirements, including procedures for trapping and disposing of tyre material produced during repair procedures
- procedures for removing, inspecting, repairing and refitting tyres and tubes, including:
    - split or multi-piece rims
    - drop centre wheels
- post-fitting procedures and checks of industrial tyres and tubes

Key types and applications of tyres, tubes, wheels and rims, including:

- radial and bias ply tyres
- tubed and tubeless tyres
- rim or hub mounted multi-piece wheels
- one piece wheels

Key types, application and operation of tyre changing equipment and tyre and tube repair equipment including:

- workplace tyre management systems.
-

Assessment Conditions

The assessment must:

- include access to:
    - a workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
    - workplace instructions
    - manufacturer tyre and tube repair procedures and specifications
    - industrial tyres and tubes specified in the performance evidence
    - tools, equipment and materials appropriate for removing, inspecting, repairing and fitting industrial tyres and tubes, including:
        - tyre and tube repair tools and equipment
        - tyre and tube repair consumables
        - tyre changing tools and equipment.
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment

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- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards
-

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTQ001 Inspect heavy commercial vehicle driveline components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect heavy commercial vehicle driveline components according to manufacturer specifications. It involves preparing for the task, inspecting the components, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements	Performance Criteria

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Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect driveline components	1.1 Task instruction is interpreted and vehicle components to be worked on are identified 1.2 Inspection information is sourced and interpreted 1.3 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect driveline components	2.1 Driveline components are inspected according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle or components are presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer and workshop literature when seeking inspection procedures and specifications relating to driveline components.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey

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to:	information.
Numeracy skills to:	• compare component wear to manufacturer specifications.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for preventing entanglement in rotating shafts.

Unit Mapping Information

Equivalent to AURHTQ2001 Inspect heavy commercial vehicle driveline components

Links

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Assessment Requirements for AURHTQ001 Inspect heavy commercial vehicle driveline components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect the driveline components of one heavy commercial vehicle, including:
  - universal joints and centre bearings
  - drive shafts and half shafts
  - yokes and flanges.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting heavy commercial vehicle driveline components, including procedures for preventing entanglement in rotating shafts
- identification and function of driveline components, including:
  - universal joints, constant velocity joints and centre bearings
  - drive shafts and half shafts
  - yokes and flanges
- inspection procedures for heavy commercial vehicle driveline components, including:
  - component wear or damage
  - lubricant leaks
  - drive shaft mounts and support brackets.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy commercial vehicle driveline components that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer driveline specifications
- one heavy commercial vehicle with driveline components
- tools, equipment and materials appropriate for inspecting heavy commercial vehicle driveline components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTQ003 Diagnose and repair heavy vehicle drive shafts

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in heavy vehicle drive shafts. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. Drive shafts include those in agricultural machinery, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and	1.1 Job requirements are determined from workplace instructions

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repair heavy vehicle drive shaft	1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose drive shaft	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair drive shaft	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked according to manufacturer procedures 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and drive shaft or vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking drive shaft specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure drive shaft components and use basic mathematical operations, including addition and subtraction, to calculate angles, distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment such as drive line angle gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • isolating and stabilising vehicles or machines
	  • working with rotating shafts.

Unit Mapping Information

Equivalent to AURHTQ3003 Repair final drive - driveline (heavy vehicle)

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Links

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Assessment Requirements for AURHTQ003 Diagnose and repair heavy vehicle drive shafts

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in one heavy vehicle drive shaft, including:
  - replacing one universal joint
  - completing two of the following further actions:
    - replacing centre support bearing assembly
    - measuring drive shaft angles and phasing
    - measuring run-out of drive shaft
    - balancing drive shaft
    - replacing slip spline.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing heavy vehicle drive shafts, including procedures for:
  - isolating and stabilising vehicles or machines
  - working with rotating shafts
- operating principles of heavy vehicle drive shafts and associated components, including:
  - universal joint working angles
  - drive shaft phasing angles
  - velocity fluctuation of universal joints
- application, purpose and operation of heavy vehicle drive shafts and components, including:

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  - single and multi-piece shafts
  - universal joints
  - centre support assembly
  - slip joints
  - shaft alignment
- diagnostic testing procedures for heavy vehicle drive shafts, including:
  - drive shaft noise and vibration diagnosis
  - drive line geometry and phasing
  - drive shaft run-out
- repair procedures for heavy vehicle drive shafts, including procedures for:
  - dismantling drive shafts
  - inspecting drive shafts
  - reassembling drive shafts and aligning their components
- post-repair testing procedures for heavy vehicle drive shafts.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle drive shafts that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer drive shaft specifications
- heavy vehicle with faults in its drive shaft
- diagnostic equipment for heavy vehicle drive shafts
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle drive shafts.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTX001 Diagnose and repair heavy vehicle manual transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the manual transmissions of heavy vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The manual transmissions include those in agricultural machinery, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes**.**	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used,

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	further information is detailed in the range of conditions section**.**
1. Prepare to diagnose and repair heavy vehicle manual transmission	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose manual transmission	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures, and environmental and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair manual transmission	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked according to manufacturer procedures 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or transmission is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking manual transmission system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure transmission system components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, tolerances and deviations from manufacturer specifications • calculate gear ratios and torque reduction and multiplication.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers and micrometers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using transmission lifting and supporting equipment
	  • manual handling heavy vehicle manual transmissions.

Environmental requirements must	• procedures for trapping, storing and disposing of clutch dust, brake fluid and oils released from manual transmissions.

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include:	

Unit Mapping Information

Equivalent to AURHTX3001 Repair transmissions - manual (heavy vehicle)

Links

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Assessment Requirements for AURHTX001 Diagnose and repair heavy vehicle manual transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- disassemble and reassemble one heavy vehicle manual transmission that has a minimum of 9 speeds.
- diagnose and repair a fault in three of the following components of a heavy vehicle manual transmission:
  - input shaft
  - gear shift mechanisms
  - gears and shafts
  - transmission bearings
  - auxiliary section and controls
  - gasket and seal leaks
- remove, refit or replace a heavy vehicle manual transmission.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing heavy vehicle transmissions, including procedures for:
  - using transmission lifting and supporting equipment
  - manual handling heavy vehicle manual transmissions
- environmental requirements, including procedures for trapping, storing and disposing of clutch dust, brake fluid and oils released from manual transmissions

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- operating principles of heavy vehicle manual transmissions and associated components, including:
  - gears, including:
    - gear types
    - gear ratios and torque reduction and multiplication
    - simple gear trains
    - compound gear trains
- application, purpose and operation of heavy vehicle manual transmissions and components, including:
  - power flows, including:
    - longitudinal manual transmissions
    - transfer cases
  - synchromesh operation
  - gearshift mechanisms, including:
    - mechanical
    - air
    - electrical/pneumatic
    - electronically automated manual transmissions
  - transfer cases
  - power take-off
- diagnostic testing procedures for heavy vehicle manual transmissions, including:
  - abnormal noise diagnosis
  - electronic diagnosis
  - shift diagnosis
- dismantling procedures for heavy vehicle manual transmissions, including:
  - measuring clearances and tolerances
  - inspecting components
- repair procedures for heavy vehicle manual transmissions, including:
  - gears, shafts and bearings
  - electronic control systems
  - gear shift mechanism
- post-repair testing procedures for heavy vehicle manual transmissions.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the trailer electronically controlled roll stability systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer manual transmission specifications
- one heavy vehicle with faults in its manual transmission that has a minimum of 9 speeds
- diagnostic equipment for heavy vehicle manual transmissions
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle manual transmissions.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTX002 Inspect, test and replace heavy vehicle automatic transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, test and replace automatic or power shift transmissions and associated components. It involves preparing for the task, inspecting and testing the transmission, replacing the transmission, performing post-installation testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The automatic transmissions include those of agricultural machinery, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Transmission

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and test transmission	1.1 Job requirements are determined from workplace instructions 1.2 Inspection and testing procedures and information are sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and test equipment and materials are selected and checked for serviceability
2. Inspect and test transmission and analyse results	2.1 Inspection and tests are carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection and test results are compared with manufacturer specifications 2.3 Inspection and test findings are reported according to workplace procedures, including recommendations for necessary repairs, replacement or adjustments
3. Prepare to remove and replace transmission	3.1 Hazards associated with the work are identified and risks are managed 3.2 Removal and replacement procedures and information are sourced and interpreted 3.3 Tools, equipment and materials are selected and checked for serviceability
4. Remove and replace transmission	4.1 Transmission is removed and replaced according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Adjustments during removal and replacement are made according to manufacturer specifications and workplace procedures 4.3 Post-replacement testing is carried out according to workplace procedures
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking inspection, testing and replacement procedures and specifications relating to heavy vehicle automatic transmissions.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection and test findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report test findings and make recommendations.
Numeracy skills to:	• interpret test equipment readings and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, tolerances and deviations from manufacturer specifications • calculate liquid volumes.
Planning and Organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use transmission test equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • using lifting and supporting equipment when working with transmissions

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	• manually handling heavy vehicle transmissions • environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmissions.

Unit Mapping Information

Equivalent to AURHTX3002 Inspect, test and replace transmissions - automatic (heavy vehicle)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTX002 Inspect, test and replace heavy vehicle automatic transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, test and replace the automatic transmissions of two different heavy vehicles or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, testing and replacing heavy vehicle automatic transmissions, including procedures for:
  - using lifting and supporting equipment when working with transmissions
  - manually handling heavy vehicle transmissions
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmissions
- operating principles of heavy vehicle automatic transmissions, including:
  - fluid couplings
  - mechanical systems, including:
    - gear types
    - gear ratios and torque
    - simple and compound planetary gear trains
    - gear range and transfer case power flows
  - hydraulic systems and components
  - electronic systems, including:
    - electronic control units (ECU)

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    - electronic sensors
    - solenoids
- inspection procedures for heavy vehicle automatic transmissions, including:
  - visual, aural and functional assessment, including:
    - fluid leakage
    - oil condition
    - speed and range selection
    - wear, damage, and corrosion
    - electrical circuit faults
- testing procedures for heavy vehicle automatic transmissions, including:
  - stall testing
  - pressure testing
  - scan tool testing
- replacement procedures for heavy vehicle automatic transmissions
- post-replacement testing procedures for heavy vehicle automatic transmissions, including operational testing.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the automatic transmissions of heavy vehicles or machinery that they have inspected, tested and replaced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer automatic transmission specifications
- two different heavy vehicles or machinery with automatic transmissions requiring testing and replacement
- test equipment for heavy vehicle automatic transmissions

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- tools, equipment and materials appropriate for inspecting, testing and replacing heavy vehicle automatic transmissions.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTX005 Analyse and evaluate faults in heavy commercial vehicle transmission and driveline systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in heavy commercial vehicle transmission and driveline systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The transmission and driveline systems include those of heavy commercial vehicles, and include automatic or manual transmissions. This unit does not apply to agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements	Performance Criteria

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Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for heavy commercial vehicle transmission or driveline system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Transmission or driveline system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to the rectification method
5. Complete work	5.1 Final inspection is made to ensure work is to workplace

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processes	expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to heavy commercial vehicle transmission and driveline systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised heavy commercial vehicle transmission and driveline system diagnostic equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental	• work health and safety (WHS) and occupational health and safety

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requirements must include:	(OHS) requirements, including procedures for: • lifting, supporting and manually handling heavy vehicle transmissions • working with rotating shafts • environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmission and driveline systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURHTX5005 Analyse and evaluate heavy vehicle transmission system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTX005 Analyse and evaluate faults in heavy commercial vehicle transmission and driveline systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - transmission system of a heavy commercial vehicle
  - driveline system of a different heavy commercial vehicle
  - transmission or driveline system of a third heavy commercial vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in heavy commercial vehicle transmission and driveline systems, including procedures for:
  - lifting, supporting and manually handling heavy vehicle transmissions
  - working with rotating shafts
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmission and driveline systems
- principles and processes involved in planning and implementing analysis and evaluation of transmission and driveline system faults
- design and planning of diagnostic procedures of heavy commercial vehicle transmission and driveline system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - pneumatic faults

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  - electrical faults
- procedures for analysing and evaluating heavy commercial vehicle transmission and driveline system faults, including:
  - system failure analysis
  - component failure analysis
- types, functions, operation and limitations of the following systems:
  - clutch
  - manual transmission
  - automated manual transmission (AMT)
  - automatic transmission
  - drive shafts
  - final drive assemblies
- testing procedures for heavy commercial vehicle transmission and driveline systems, including:
  - oil and pneumatic pressures
  - transmission performance
  - powertrain management
  - driveline angles
  - driveline vibrations
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in transmission and driveline systems
- requirements of Australian Design Rules (ADRs) relating to heavy commercial vehicle transmission and driveline systems
- procedures for documenting and reporting the analysis and evaluation process.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy commercial vehicle transmission and driveline systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer heavy commercial vehicle transmission and driveline system specifications
- three different heavy commercial vehicles with transmission and driveline system faults
- diagnostic equipment for heavy commercial vehicle transmission and driveline systems
- tools, equipment and materials appropriate for analysing and evaluating heavy commercial vehicle and driveline systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTY001 Inspect and service mechanical connections of heavy vehicles and trailers over 4.5 tonnes

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service mechanical connections fitted to both heavy vehicles and trailers over 4.5 tonnes. It involves preparing for the task, inspecting the mechanical connections, reporting the inspection findings, servicing and adjusting the connections, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The mechanical connections of heavy vehicles and trailers over 4.5 tonnes include those of agricultural machinery, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Chassis and Frame

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service mechanical connection system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information relating to ***mechanical connections of heavy vehicle and trailer*** is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect mechanical connection system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service mechanical connection system	3.1 ***Service*** and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 ***Final inspection*** is made to ensure work is to workplace expectations and vehicle and trailer are presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to mechanical connections of heavy vehicles and trailers over 4.5 tonnes.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use mathematical operations, including addition and subtraction, to measure and compare components to manufacturer specifications and tolerances.
Technology skills to:	• use measuring tools and gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Mechanical connections of heavy vehicle and trailer must include:	• fifth wheel systems • king pins • landing gear systems.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting and supporting heavy vehicles and trailers
	  • safely manoeuvring heavy vehicles and trailers.

Service must include:	• applying and replacing lubricant • undertaking adjustments and operational testing.
Environmental requirements must include:	• environmental requirements, including procedures for trapping, storing and disposing of lubricants released from mechanical connections.
Final inspection must include:	• final check of heavy vehicle mechanical connection systems and components • checking heavy vehicle mechanical connection system operation

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	during mobile or stationary tests.

Unit Mapping Information

Equivalent to AURHTY2001 Inspect and service mechanical connections of heavy vehicles and trailers over 4.5 tonnes

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTY001 Inspect and service mechanical connections of heavy vehicles and trailers over 4.5 tonnes

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the mechanical connections of two different heavy vehicles and their trailers, including five of the following:
  - fifth wheel assembly
  - king pins and upper couplers
  - pintle hook and drawbar
  - landing gear systems
  - electrical connections
  - pneumatic connections.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing mechanical connections of heavy vehicles and trailers, including procedures for:
  - lifting and supporting heavy vehicles and trailers
  - safely manoeuvring heavy vehicles and trailers
- environmental requirements, including procedures for trapping, storing and disposing of lubricants released from mechanical connections
- identification and function of mechanical connections of heavy vehicles and trailers over 4.5 tonnes, including:
  - fifth wheel assembly

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  - king pins and upper couplers
  - pintle hook and drawbars
  - landing gear systems
  - electrical connections
  - pneumatic connections
- types and applications of mechanical connection lubricants
- inspection procedures for mechanical connections of heavy vehicles and trailers over 4.5 tonnes
- service and adjustment procedures for mechanical connections of heavy vehicles and trailers over 4.5 tonnes
- post-service testing procedures for mechanical connections of heavy vehicles and trailers over 4.5 tonnes.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicles and trailers over 4.5 tonnes that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mechanical connection specifications
- two different heavy vehicles and trailers over 4.5 tonnes with mechanical connections requiring servicing
- lubricating equipment for mechanical connections of heavy vehicles and trailers over 4.5 tonnes
- tools, equipment and materials appropriate for inspecting and servicing mechanical connections of heavy vehicles and trailers over 4.5 tonnes.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURHTZ001 Diagnose and repair heavy vehicle emission control systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the emission control systems of heavy vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The emission control systems include those in agricultural machinery, heavy commercial vehicles, marine vessels or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Heavy Vehicle

Unit Sector

Technical - Emission and Exhaust

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
1. Prepare to diagnose and repair heavy vehicle emission control system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose emission control system	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures, and environmental and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair emission control system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or system is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are cleaned and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate emission system information efficiently.
Reading skills to:	• determine job requirements from workplace instructions • interpret information from manufacturer and workshop literature when seeking vehicle emission specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• understand information, such as exhaust gas percentages and ratios.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised emission testing equipment, such as exhaust gas analysers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working safely with engines producing toxic emissions.
Environmental requirements must include:	• procedures for containing and disposing of emission control system fuels, fluids and components.

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Unit Mapping Information

Equivalent to AURHTZ3001 Diagnose and repair heavy vehicle emission control systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURHTZ001 Diagnose and repair heavy vehicle emission control systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in three of the following heavy vehicle emission control systems:
  - closed crankcase ventilation system
  - exhaust gas recirculation system
  - diesel engine particulate filter system
  - selective catalytic reduction system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing heavy vehicle emission control systems, including procedures for working safely with engines producing toxic emissions
- environmental requirements, including procedures for containing and disposing of emission control system fuels, fluids and components
- heavy vehicle emissions and their effects on the environment and health:
  - carbon monoxide
  - oxides of nitrogen
  - ozone
  - sulphur dioxide
  - particulate matter
  - hydrocarbons

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- application, purpose and operating principles of heavy vehicle emission control systems and components, including:
  - closed crankcase ventilation system
  - exhaust gas recirculation system
  - diesel engine particulate filter system
  - selective catalytic reduction system
  - catalytic converter system
- diagnostic testing procedures for heavy vehicle emission control systems, including:
  - closed crankcase ventilation system operation
  - exhaust gas recirculation system operation
  - diesel engine particulate filter system operation
  - selective catalytic reduction system operation
  - catalytic converter system operation
  - exhaust gas analysis
- repair procedures for heavy vehicle emission control systems, including procedures for removing, replacing and adjusting the system components
- post-repair testing procedures for heavy vehicle emission control systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the heavy vehicle emission control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer heavy vehicle emission control system specifications
- heavy vehicle engines with faults in the emission control systems specified in the performance evidence

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- diagnostic equipment for testing heavy vehicle emission control systems
- tools, equipment and materials appropriate for repairing, replacing and adjusting heavy vehicle emission control systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTA001 Carry out minor adjustments to motorcycles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out minor adjustments to motorcycle systems, components and equipment. It involves preparing for the work, inspecting the motorcycle and determining the work requirement, carrying out minor adjustments, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation for entering the automotive retail, service and repair industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Motorcycle

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to carry out minor adjustments	1.1 Task instructions are interpreted and motorcycle to be worked on is identified 1.2 Motorcycle component information is sourced and interpreted 1.3 Potential hazards and risks associated with the task are identified and reported to workplace supervisor 1.4 Tools and equipment are selected and checked for serviceability
2. Inspect motorcycle and determine work requirement	2.1 Inspection is carried out according to workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary minor adjustments
3. Undertake minor adjustment activities	3.1 Adjustment options are analysed and those most appropriate to the circumstances are selected 3.2 Adjustments are carried out according to manufacturer specifications and workplace procedures, and without causing damage to components or systems 3.3 Post-adjustment testing is carried out to ensure safe and correct operation of motorcycle
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instructions and workplace standards 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer specifications, workplace procedures and safety requirements relating to adjustment procedures and specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation, including tags, using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• measure component tolerances and compare findings with manufacturer specifications.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting and supporting motorcycles
	  • avoiding entanglement when working with chains, sprockets, belts and pulleys.

Unit Mapping Information

Equivalent to AURJTA1001 Perform minor adjustments to motorcycles

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTA001 Carry out minor adjustments to motorcycles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out minor adjustments to one motorcycle, including:
  - clutch
  - chain tension
  - one of the following:
    - brakes
    - suspension and steering
    - engine, attachments and controls
    - foot controls
    - handlebars and hand controls
    - accessories.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety(WHS) and occupational health and safety (OHS) requirements relating to carrying out minor adjustments to motorcycles, including procedures for:
  - lifting and supporting motorcycles
  - avoiding entanglement when working with chains, sprockets, belts and pulleys
- identification and function of motorcycle systems, including:
  - clutch
  - chain drive
  - brakes

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  - suspension
  - steering
  - engine, attachments and controls
  - foot controls
  - handlebars and hand controls
  - accessories
- motorcycle adjustment procedures, including hand and foot controls
- motorcycle post-adjustment testing procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the minor adjustments that they have carried out on motorcycle components and equipment, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer motorcycle specifications
- one motorcycle and the motorcycle components specified in the performance evidence
- tools, equipment and materials appropriate for carrying out minor adjustments to motorcycles.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTA002 Remove and replace motorcycle components and accessories

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and replace motorcycle components and accessories. It involves preparing for the work, removing and replacing the component, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Motorcycle

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and replace motorcycle component or accessory	1.1 Task requirements are determined from workshop or activity instructions 1.2 Removal and replacement procedures and information are sourced and interpreted 1.3 Potential hazards and risks associated with the task are identified and reported to workplace supervisor 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Remove component or accessory	2.1 Component or accessory is identified and removed according to manufacturer specifications and without causing damage to other components or systems 2.2 Inspection of component or accessory is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.3 Inspection findings are reported according to workplace procedures, including recommendations for replacement and minor adjustments
3. Replace component or accessory	3.1 Component or accessory is replaced according to manufacturer specifications and without causing damage to components or systems 3.2 Adjustments are made to component or accessory according to manufacturer specifications 3.3 Post-replacement testing is carried out according to workplace procedures and further adjustments are made as required
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instructions and workplace standards 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer specifications, workplace procedures, and safety requirements relating to motorcycle components and accessories.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• measure components and accessories, compare with specifications, and perform minor adjustments to them.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting and supporting motorcycles
	  • selecting and using personal protective equipment (PPE)
	  • avoiding entanglement when working with chains, sprockets, belts and pulleys
	• environmental requirements, including procedures for trapping, storing and disposing of lubricants, oils and fluids released during the adjustment process.

Unit Mapping Information

Equivalent to AURJTA1002 Remove and replace motorcycle components and accessories

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTA002 Remove and replace motorcycle components and accessories

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and replace three of the following motorcycle components and accessories:
  - wheels
  - mudguards
  - lighting system components
  - suspension system components
  - brake system components
  - fuel tank
  - oil tank
  - seat
  - control cables
  - ignition system components
  - handlebars and hand controls
  - foot controls and foot pegs
  - mufflers and exhaust pipes
  - windshield
  - pannier bags
  - luggage racks.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

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- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and replacing motorcycle components and accessories, including:
  - lifting and supporting motorcycles
  - selecting and using personal protective equipment (PPE)
  - avoiding entanglement when working with chains, sprockets, belts and pulleys
- environmental requirements, including procedures for trapping, storing and disposing of lubricants, oils and fluids released during the adjustment process
- identification and function of the motorcycle components and accessories specified in the performance evidence
- motorcycle removal and replacement procedures, including the use of tools and equipment
- testing procedures and adjustment methods relating to motorcycle component and accessory removal and replacement
- motorcycle post-adjustment testing procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle components and accessories that they have removed and replaced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- motorcycle component and accessory specifications
- one motorcycle and the motorcycle components and accessories specified in the performance evidence
- tools, equipment and materials appropriate for removing and replacing motorcycle components and accessories.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTA003 Analyse and evaluate faults in motorcycle engine and transmission systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in motorcycle engine and transmission systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The engine and transmission systems include those of motorcycles, motor scooters or all-terrain vehicles (ATVs).

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Motorcycle

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for motorcycle engine or transmission system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures, and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Engine or transmission system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from the available evidence and documented to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to motorcycle engine and transmission systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised motorcycle engine and transmission system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting and supporting motorcycle engine and transmission systems
	  • avoiding entanglement in chains, sprockets, belts and pulleys
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from engine and transmission systems.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURJTA5003 Analyse and evaluate motorcycle engine and transmission system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTA003 Analyse and evaluate faults in motorcycle engine and transmission systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - engine system of a motorcycle
  - transmission system of a different motorcycle
  - engine or transmission system of a third motorcycle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in motorcycle engine and transmission systems, including procedures for:
  - lifting and supporting motorcycle engine and transmission systems
  - avoiding entanglement in chains, sprockets, belts and pulleys
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from engine and transmission systems
- principles and processes involved in planning and implementing analysis and evaluation of motorcycle engine and transmission system faults
- design and planning of diagnostic procedures of motorcycle engine and transmission system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - electrical faults

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- procedures for analysing and evaluating motorcycle engine and transmission system faults, including:
  - system failure analysis
  - component failure analysis
- types, functions, operation and limitations of motorcycle engines and components, including two-stroke and four-stroke engines
- types, functions, operation and limitations of motorcycle transmission systems and components, including:
  - continuously variable transmission (CVT)
  - dual clutch transmission
  - constant mesh transmission
  - dry, wet and centrifugal clutch
- operation and limitations of motorcycle driveline systems and components, including:
  - chain drive
  - belt drive
  - shaft drive
- testing procedures for motorcycle engine and transmission systems, including for engine performance under load
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in motorcycle engine and transmission systems
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to motorcycle engine and transmission systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle engine and transmission systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle engine and transmission system specifications
- three different motorcycles with faults in the engine and transmission systems
- diagnostic equipment for motorcycle engine and transmission systems
- tools, equipment and materials appropriate for analysing and evaluating motorcycle engine and transmission systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTB002 Analyse and evaluate faults in motorcycle braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in motorcycle braking systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The braking systems include those of motorcycles, motor scooters or all-terrain vehicles (ATVs).

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Motorcycle

Unit Sector

Technical - Brakes

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for motorcycle braking system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures, and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Braking system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from the available evidence and documented to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to motorcycle braking systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised motorcycle braking system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting and supporting motorcycle braking systems
	  • managing and controlling brake dust and brake fluid
	• environmental requirements, including procedures for trapping, storing and disposing of brake dust and brake fluid released from braking systems.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURJTB5002 Analyse and evaluate motorcycle braking system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTB002 Analyse and evaluate faults in motorcycle braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - mechanical braking system of a motorcycle
  - hydraulic braking system of a different motorcycle
  - anti-lock braking (ABS) system of a third motorcycle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in motorcycle braking systems, including procedures for:
  - lifting and supporting motorcycle braking systems
  - managing and controlling brake dust and brake fluid
- environmental requirements, including procedures for trapping, storing and disposing of brake dust and brake fluid released from braking systems
- principles and processes involved in planning and implementing analysis and evaluation of motorcycle braking system faults
- design and planning of diagnostic procedures of motorcycle braking system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - electrical faults
- procedures for analysing and evaluating motorcycle braking system faults, including:

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    - system failure analysis
    - component failure analysis
- types, functions, operation and limitations of motorcycle braking systems and components, including:
    - friction materials
    - mechanical systems
    - hydraulic systems
    - ABS systems
    - electronic control circuits and valves
- testing procedures for motorcycle braking systems, including:
    - mechanical cables and linkages
    - hydraulic lines and cylinder integrity and leaks
    - operation of electronic control module
    - stopping efficiency
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in motorcycle braking systems
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to motorcycle braking systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle braking system specifications

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- three different motorcycles with faults in the braking systems specified in the performance evidence
- diagnostic equipment for motorcycle braking systems
- tools, equipment and materials appropriate for analysing and evaluating motorcycle braking systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTD001 Inspect motorcycle suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect motorcycle suspension systems according to manufacturer specifications. It involves preparing for the task, identifying both the front and rear suspension systems, inspecting the general condition of the motorcycle, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Motorcycle

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect motorcycle suspension system	1.1 Task instruction is interpreted and motorcycle to be worked on is identified 1.2 Inspection information is sourced and interpreted 1.3 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect suspension system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets task instruction and workplace standards, and motorcycle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information on suspension system specifications.
Reading skills to:	• interpret key information from manufacturer and workshop literature when seeking inspection procedures and specifications relating to suspension systems**.**

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Skills	Description
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate suspension travel distances.
Technology skills to:	• use measuring equipment, such as tape measures and rulers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with stored energy in springs
	  • lifting and supporting motorcycles.

Unit Mapping Information

Equivalent to AURJTD2001 Inspect motorcycle suspension systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTD001 Inspect motorcycle suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect the front and rear suspension systems of at least two different motorcycles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) relating to inspecting motorcycle suspension systems, including procedures for:
  - working with stored energy in springs
  - lifting and supporting motorcycles
- identification and function of motorcycle suspension systems, including:
  - shock absorbers, including:
    - twin shock absorbers
    - mono-shock absorbers
  - telescopic fork suspension
  - inverted telescopic fork suspension
  - front telelever and duolever
  - rear swing arm suspension
- types and applications of suspension fluids and lubricants
- inspection procedures for motorcycle suspension systems, including:
  - oil leaks
  - ride height
  - component wear

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- tyres and inflation
- mounting bolts and attachments
- suspension bearings and bushing.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle suspension systems that they have inspected, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer suspension system specifications
- two different motorcycles
- tools, equipment and materials appropriate for inspecting motorcycle suspension systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTD002 Inspect motorcycle steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect motorcycle steering systems according to manufacturer specifications. It involves preparing for the task, inspecting the system, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Motorcycle

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect motorcycle steering system	1.1 Task instruction is interpreted and motorcycle to be worked on is identified 1.2 Inspection information is sourced and interpreted 1.3 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect steering system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets task instruction and workplace standards, and motorcycle is presented ready for use 3.3 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.4 Tools and equipment are checked and stored according to workplace procedures 3.5 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information on steering system specifications.
Reading skills to:	• interpret key information from manufacturer and workshop literature when seeking inspection procedures and specifications relating to steering systems.

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Skills	Description
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• measure steering free play • measure tyre inflation pressures.
Technology skills to:	• use measuring equipment, such as tape measures and rulers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for lifting and supporting motorcycles.

Unit Mapping Information

Equivalent to AURJTD2002 Inspect motorcycle steering systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTD002 Inspect motorcycle steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect the steering systems of two different motorcycles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) relating to inspecting motorcycle steering systems, including procedures for lifting and supporting motorcycles
- identification and function of motorcycle steering system components, including:
  - telescopic forks and fork legs
  - wheel and axle assembly
  - head tube
  - headstock and bearings
  - triple clamp
  - handle bars, clamps and grips
  - steering damper
  - steering stops
- types and applications of motorcycle steering lubricants
- inspection procedures for motorcycle steering systems, including:
  - oil leaks
  - component wear
  - tyres and inflation

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- mounting bolts and attachments
- steering bearings and
- front axle alignment.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle steering systems that they have inspected, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer steering system specifications
- two different motorcycles
- tools, equipment and materials appropriate for inspecting motorcycle steering systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTD006 Analyse and evaluate faults in motorcycle steering, suspension and frame systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in motorcycle steering, suspension and frame systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The steering, suspension and frame systems include those of motorcycles, motor scooters or all-terrain vehicles (ATVs).

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Motorcycle

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for motorcycle steering, suspension or frame system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures, and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Motorcycle steering, suspension or frame system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to motorcycle steering, suspension and frame systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised motorcycle steering, suspension and frame system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with stored energy in springs • environmental requirements, including procedures for trapping, storing and disposing of oils released from steering, suspension and frame systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURJTD5006 Analyse and evaluate motorcycle steering, suspension and frame system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTD006 Analyse and evaluate faults in motorcycle steering, suspension and frame systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - steering system of a motorcycle
  - suspension system of a different motorcycle
  - frame system of a third motorcycle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in motorcycle steering, suspension and frame systems, including procedures for working with stored energy in springs
- environmental requirements, including procedures for trapping, storing and disposing of oils released from steering, suspension and frame systems
- principles and processes involved in planning and implementing analysis and evaluation of motorcycle steering, suspension and frame system faults
- design and planning of diagnostic procedures of motorcycle steering, suspension and frame system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - electrical faults
- procedures for analysing and evaluating motorcycle steering, suspension and frame system faults, including:
  - system failure analysis

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    - component failure analysis
- types, functions, operation and limitations of the following systems, including:
    - steering, including:
        - head tube
        - headset bearings
        - triple clamp
    - suspension, including:
        - shock absorbers, including twin shock and mono-shock absorbers
        - telescopic fork suspension
        - inverted telescopic fork suspension
        - front telelever and duolever
        - rear suspension, including twin shock swingarm, monoshock swingarm, monoshock single sided swingarm, rear monolever and rear paralever
    - frames, including:
        - tubular frame
        - alloy formed section
        - composite materials
- testing procedures for motorcycle steering, suspension and frame systems, including:
    - mechanical linkages
    - shock absorber performance under load
    - damper performance under load
    - frames for fatigue and stress
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in motorcycle steering, suspension and frame systems
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to motorcycle steering, suspension and frame systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle steering, suspension and frame systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle steering, suspension and frame system specifications
- three different motorcycles with steering, suspension and frame system faults
- diagnostic equipment for motorcycle steering, suspension and frame systems
- tools, equipment and materials appropriate for analysing and evaluating motorcycle steering, suspension and frame systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTJ001 Remove, inspect and refit motorcycle wheel and tyre assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove, inspect and refit wheel and tyre assemblies fitted to motorcycles. It involves identifying and confirming work requirements, preparing for the work, removing, inspecting and refitting the wheel and tyre assembly, and completing workplace processes and documentation.

It applies to those working in the motorcycle service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Motorcycle

Unit Sector

Technical - Wheels and Tyres

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
wheel and tyre assembly	1.2 Removal, inspection and refitting information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Remove and inspect wheel and tyre assembly	2.1 Wheel and tyre assembly is removed according to manufacturer specifications, workplace procedures and ***safety requirements***, and without causing damage to components or systems 2.2 Wheel and tyre assembly, mounting points, and fitting are inspected for condition, damage and wear 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs, replacements or adjustments
3. Refit wheel and tyre assembly	3.1 Refitting options are analysed and those most appropriate to the circumstances are selected 3.2 Wheel and tyre assembly is fitted and adjusted according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.3 Tightening sequence and torque settings are completed according to manufacturer specifications and workplace procedures 3.4 Wheel and tyre assembly is checked for correct operation and alignment according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 ***Final inspection*** is made to ensure work is to workplace expectations and motorcycle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer specifications and workshop literature when seeking tyre and wheel rim specifications, including tightening procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation, making recommendations and recording parts and material used.

Numeracy skills to:	• interpret numerical information in:
	  • workplace instructions
	  • manufacturer specifications
	  • tyres and wheels
	  • tyre inflation gauges
	• understand numerical divisions in metric and imperial units of measurement.

Problem solving skills to:	• recognise limitations and seek advice • seek information and assistance to solve problems.
Technology skills to:	• operate wheel and tyre assembly removal, inspection, refitting and adjustment tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting and supporting motorcycles
	  • manually handling wheel and tyre assemblies.

Final inspection must include**:**	• wheel and tyre assembly run-out and alignment testing • testing the operation of motorcycle systems affected by the removal and refitting of wheel and tyre assemblies

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	• checking chain and belt drive tension.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTJ001 Remove, inspect and refit motorcycle wheel and tyre assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove, inspect, refit and adjust the wheel and tyre assemblies of three different motorcycles, including:
  - one front wheel assembly
  - one of each of the following rear wheel assemblies:
    - chain driven
    - belt driven
    - driveshaft driven.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing, inspecting and refitting motorcycle wheel and tyre assemblies, including procedures for:
  - lifting and supporting motorcycles
  - manually handling wheel and tyre assemblies
- types and applications of wheel assemblies, including:
  - wire spoke wheels
  - composite type wheels
  - one piece wheels
- types and applications of motorcycle drives, including:
  - chain drive

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  - belt drive
  - driveshaft drive systems
- procedures for removing and refitting motorcycle wheel and tyre assemblies, including:
  - spoke tensioning
  - axle nut tensioning
  - drive chain and drive belt tensioning
- procedures for inspecting motorcycle wheel and tyre assemblies, including:
  - tyre condition
  - rim condition
  - anti-lock braking sensor and signal rotor
  - tyre pressure monitoring units
- post-fitting procedures and checks of motorcycle wheel and tyre assemblies, including:
  - wheel balancing
  - wheel and tyre assembly run-out
  - correct operation of other systems affected by removing and refitting wheel assemblies, including checking wheel assembly coding of the electronic control unit (ECU).

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle wheel and tyre assemblies that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle wheel and tyre assembly specifications
- three different motorcycles with the front and rear wheel assemblies specified in the performance evidence

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- tools, equipment and materials appropriate for removing, inspecting and refitting motorcycle wheel and tyre assemblies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTJ002 Remove, inspect, repair and refit motorcycle tyres and tubes

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove tyres and tubes from motorcycle wheels, inspect the tyre and wheel to assess serviceability, carry out tyre and tube repairs, and reassemble the wheel assembly. It involves identifying and confirming work requirements, preparing for the work, inspecting, repairing and refitting motorcycle tyres and tubes, and completing workplace processes and documentation.

It applies to those working in the motorcycle service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Motorcycle

Unit Sector

Technical - Wheels and Tyres

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove, repair and refit motorcycle tyres and tubes	1.1 Job requirements are determined from workplace instructions 1.2 Tyre and tube removal, inspection, repair and refitting information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Remove and inspect tyres, tubes and wheels	2.1 Tyres and tubes are removed from wheels according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Tyres, tubes and wheels are inspected according to manufacturer specifications and workplace procedures 2.3 Inspection findings and recommendations for necessary repairs are reported according to workplace procedures
3. Repair and refit tyres and tubes	3.1 Repair options are analysed and those most appropriate to the circumstances are selected 3.2 Tyres and tubes are repaired according to manufacturer specifications and workplace procedures 3.3 Tyre is mounted to wheel according to manufacturer specifications and workplace procedures, and without causing damage to components or systems 3.4 Assembled wheel and tyre are checked for serviceability and correct assembly, and wheel assembly is inflated according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and wheel assembly is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate tyre repair information efficiently.
Reading skills to:	• interpret information in manufacturer specifications and workshop literature when seeking tyre and tube repair procedures and specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation, making recommendations and recording material used.

Numeracy skills to:	• interpret numerical information in:
	  • manufacturer specifications
	  • wheel and rim assemblies
	  • tyres and tubes
	  • workplace instructions
	  • tyre inflation gauges
	• understand numerical divisions in metric and imperial units of measurement.

Technology skills to:	• operate tyre changing tools and equipment • operate tyre and tube repair equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • deflating and inflating motorcycle tyres
	  • manually handling motorcycle wheel assemblies
	• environmental requirements, including procedures for trapping and disposing of tyre material produced during repair procedures.

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Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTJ002 Remove, inspect, repair and refit motorcycle tyres and tubes

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove, inspect, repair and refit each of the following motorcycle tyres and their tubes:
  - road radial tyre
  - road bias tyre
  - off road tyre.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing, inspecting, repairing and refitting motorcycle tyres and tubes, including procedures for:
  - deflating and inflating motorcycle tyres
  - manually handling motorcycle wheel assemblies
- environmental requirements, including procedures for trapping and disposing of tyre material produced during repair procedures
- types and applications of different types of tyres, tubes and wheels, including:
  - road radial
  - road bias
  - off road
  - race
- types, application and function of tyre changing equipment and tyre and tube repair equipment
- procedures for deflating, dismantling and inspecting wheel assemblies, including:

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  - rim locks
  - spoke rims
  - one piece wheels
- procedures for repairing tyres and tubes
- procedures for reassembling and inflating wheel assemblies, including:
  - rim locks
  - spoke rims
  - one piece wheels
  - post-assembly checks of wheel assemblies.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle tyres and tubes that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motorcycle repair workplace or simulated workplace
- workplace instructions
- manufacturer tyre and tube repair procedures and specifications
- motorcycle tyres, tubes and wheel assemblies specified in the performance evidence
- tools, equipment and materials appropriate for removing, inspecting, repairing and refitting motorcycle tyres and tubes, including:
  - tyre and tube repair tools and equipment
  - tyre and tube repair patches and plugs
  - tyre changing tools and equipment.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTJ003 Remove and refit motorcycle wheel and tyre assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and refit wheel and tyre assemblies fitted to motorcycles. It involves preparing for the work, removing and refitting the wheel and tyre assembly, and completing the workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Motorcycle

Unit Sector

Technical - Wheels and Tyres

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove wheel and tyre assembly	1.1 Environmental and ***safety requirements*** are sourced and interpreted 1.2 Task instruction is interpreted and wheel and tyre assembly to be worked on is identified 1.3 Manufacturer specifications for removing and replacing wheel and tyre assembly are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 Tools and equipment required for removing and replacing wheel and tyre assembly are identified and checked for serviceability
2. Remove wheel and tyre assembly	2.1 Motorcycle is prepared for wheel removal according to workplace procedures and safety requirements 2.2 Wheel and tyre assembly is removed according to workplace procedures and manufacturer specifications, and without causing damage to components, tools or equipment 2.3 Wheel and tyre assembly is identified according to manufacturer specifications
3. Refit wheel and tyre assembly	3.1 Wheel and tyre assembly is prepared for replacement 3.2 Wheel and tyre assembly is replaced according to workplace procedures, manufacturer specifications and safety requirements, and without causing damage to components, tools or equipment 3.3 Wheel and tyre assembly on motorcycle is checked for correct operation
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and motorcycle is presented ready for use 4.2 and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information.
Reading skills to:	• interpret key information from manufacturer literature when seeking tyre, wheel specifications, including tightening procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• interpret numerical information on tyre inflation gauges.
Technology skills to:	• operate wheel and tyre assembly removal, refitting and adjustment tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS), occupational health and safety (OHS) requirements, including procedures for using:
	  • safety glasses, ear protection and safety footwear
	  • motorcycle lifting and supporting equipment
	  • motorcycle wheel assembly removal and refitting equipment.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTJ003 Remove and refit motorcycle wheel and tyre assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove, refit and adjust the front and rear wheel assemblies of one motorcycle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and refitting motorcycle wheel and tyre assemblies, including procedures for using:
  - safety glasses, ear protection and safety footwear
  - motorcycle lifting and supporting equipment
  - motorcycle wheel assembly removal and refitting equipment
- types of motorcycle wheels and tyres
- types and applications of motorcycle drives, including:
  - chain drive
  - belt drive
  - driveshaft drive systems
- procedures for removing and refitting motorcycle wheel and tyre assemblies, including:
  - axle nut tensioning
  - drive chain tensioning
- post-fitting procedures and checks of motorcycle wheel assemblies, including wheel and tyre assembly alignment.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle wheel and tyre assemblies that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer motorcycle wheel and tyre assembly specifications
- one motorcycle
- tools, equipment and materials appropriate for removing and refitting motorcycle wheel and tyre assemblies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTQ001 Inspect and service motorcycle driveline systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service motorcycle driveline systems. It involves preparing for the task, servicing and adjusting the chain and sprocket, belt and driveshaft drive systems, reporting the inspection findings, and completing workplace processes and documentation.

It applies to those working in the motorcycle service and repair industry. The driveline systems include those of motorcycles and motor scooters, and include road, off-road, agricultural or race motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Motorcycle

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service motorcycle driveline system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information for ***motorcycle driveline system*** is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect driveline system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service driveline system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and motorcycle or scooter is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to driveline systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate liquid volumes and service schedule intervals.
Problem solving skills to:	• refer problems outside area of responsibility to appropriate person.
Technology skills to:	• use precision measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Motorcycle driveline system must include**:**	• chain drive • belt drive • shaft drive.
Safety requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for avoiding entanglement in chains, sprockets, belts and pulleys.
Environmental requirements must include:	• procedures for handling, trapping and storing oils and lubricants released from driveline systems.

Unit Mapping Information

Equivalent to AURJTQ2001 Inspect and service motorcycle driveline systems

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTQ001 Inspect and service motorcycle driveline systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service each of the following motorcycle driveline systems:
  - chain
  - belt
  - shaft

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing motorcycle driveline systems, including procedures for avoiding entanglement in chains, sprockets, belts and pulleys
- environmental requirements, including procedures for handling, trapping and storing oils and lubricants released from driveline systems
- identification, function and basic operation of motorcycle driveline systems, including:
  - chain and sprocket
  - belt drive
  - driveshaft drive
- inspection procedures for driveline systems, including:
  - chain free play
  - gear tooth condition
  - drive shaft backlash
- service and adjustment procedures for driveline systems, including:
  - servicing and adjusting chain tension and wheel alignment

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  - measuring and adjusting belt tension and wheel alignment
  - lubricating shaft drives
- post-service testing procedures for motorcycle driveline systems.

Assessment Conditions

Assessors must satisfy NVR/ AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle driveline systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motorcycle repair workplace or simulated workplace
- workplace instructions
- manufacturer driveline system specifications
- three different motorcycles with the driveline systems specified in the performance evidence requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing motorcycle driveline systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTR001 Analyse and evaluate faults in motorcycle electrical and electronic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in motorcycle electrical and electronic systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The electrical and electronic systems include those of motorcycles, motor scooters or all-terrain vehicles (ATVs).

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Motorcycle

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for motorcycle electrical or electronic systems are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Electrical or electronic system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures and safety requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from the available evidence and documented to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to motorcycle electrical and electronic systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised motorcycle electrical and electronic system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with motorcycle ignition system high voltage
	  • identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems.

Analytical and evaluative methodology must include:	• diagnostic process, tests, test sequence and testing equipment.

Unit Mapping Information

Equivalent to AURJTR5001 Analyse and evaluate motorcycle electrical and electronic system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTR001 Analyse and evaluate faults in motorcycle electrical and electronic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in:
  - one single wire (non CAN-bus) networked circuit of a motorcycle
  - one two-wire high and low speed (CAN-bus) networked system of a different motorcycle
  - one non CAN-bus or one CAN-bus networked system of a third motorcycle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in motorcycle electrical and electronic systems, including procedures for:
  - working with motorcycle ignition system high voltage
  - identifying hazards and controlling risks associated with wearing jewellery while working around high current wiring systems
- principles and processes involved in planning and implementing analysis and evaluation of motorcycle electrical and electronic system faults
- design and planning of diagnostic procedures of motorcycle electrical and electronic system faults, including procedures for diagnosing:
  - lighting
  - charging
  - starting
  - ignition

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    - immobiliser
    - fuel injection
    - engine management
    - anti-lock braking (ABS)
- procedures for analysing and evaluating motorcycle electrical and electronic system faults, including:
    - system failure analysis
    - component failure analysis
- types, functions, operation and limitations of motorcycle electrical and electronic systems, including:
    - lighting
    - charging
    - starting
    - ignition
    - immobiliser
    - fuel injection
    - engine management
    - ABS systems
- testing procedures for motorcycle electrical and electronic systems, including the use of:
    - multimeters
    - diagnostic scan tools
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in motorcycle electrical and electronic systems
- procedures for documenting and reporting the system analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to motorcycle electrical and electronic systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle electrical and electronic systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer motorcycle electrical and electronic system specifications
- three different motorcycles with faults in the electrical and electronic systems specified in the performance evidence
- diagnostic equipment for motorcycle electrical and electronic systems
- tools, equipment and materials appropriate for analysing and evaluating motorcycle electrical and electronic systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURJTY001 Repair and align motorcycle frames

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect motorcycle frames, determine and carry out required repairs, and then align the frames and their components. It involves preparing for the task, inspecting, measuring, repairing and aligning motorcycle frames, and completing workplace processes and documentation.

It applies to those working in the motorcycle service and repair industry. It includes all types of motorcycle frames, including those with side cars and carrying compartments.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Motorcycle

Unit Sector

Technical - Chassis and Frame

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
measure motorcycle frame	1.2 Frame specifications and repair procedures are sourced and interpreted 1.3 Inspection and measurement options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Inspection and measurement tools and equipment are selected and checked according to manufacturer procedures
2. Inspect and measure frame	2.1 Frame is inspected and repair requirements are determined according to workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Repair frame	3.1 Repair procedures and information are sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked for serviceability 3.4 Frame is repaired, replaced and adjusted according to manufacturer specifications, workplace procedures, and safety requirements, and without causing damage to components or systems
4. Align frame	4.1 Alignment procedures and information are sourced and interpreted 4.2 Alignment options are analysed and those most appropriate to the circumstances are selected 4.3 Alignment tools, equipment and materials are selected and checked according to manufacturer procedures 4.4 Frame is aligned according to manufacturer specifications, workplace procedures, and safety requirements, and without causing damage to components or systems
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and frame is presented ready for use or stored 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking repair and alignment specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting findings, making repair and alignment recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report findings and make repair and alignment recommendations.
Numeracy skills to:	• measure frame alignment and use basic mathematical operation, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use measuring equipment, such as tape measures, rulers and vernier calipers • use motorcycle alignment jigs.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear • lifting and supporting motorcycles • using motorcycle frame straightening rigs.

Unit Mapping Information

Equivalent to AURJTY3001 Repair and align motorcycle frames

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURJTY001 Repair and align motorcycle frames

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- repair and align frames on two of the following motorcycles:
  - road fully fared
  - road naked
  - cruiser
  - off road
  - scooter.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing and aligning motorcycle frames, including procedures for:
  - selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear
  - lifting and supporting motorcycles
  - using motorcycle frame straightening rigs
- types and application of motorcycle frames, including those of:
  - road fully fared motorcycles
  - road naked motorcycles
  - cruiser motorcycles
  - off road motorcycles
  - scooters

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- principles of frame alignment and steering geometry as applied to motorcycles
- frame repair procedures, including application, purpose and operation of straightening jigs
- frame alignment and adjustment procedures, including procedures for checking and adjusting swing arm alignment
- regulatory requirements relating to repairing and aligning motorcycle frames, including Australian Design Rules.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motorcycle frames that they have repaired and aligned, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- motorcycle manufacturer frame alignment specifications
- Australian Design Rules
- two different motorcycles as specified in the performance evidence
- motorcycle frame alignment jig
- tools, equipment and materials appropriate for repairing and aligning motorcycle frames.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKKJ001 Manage use of tyre management software

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to identify the scope of information available in tyre management software, and to make decisions using the software. The unit also involves monitoring the use of tyre management software, and providing support for others using the software.

It applies to those who use tyre management software to coordinate the effective use of tyres in a vehicle fleet or similar operation.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Information Technology - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Identify scope of tyre management software	1.1 Categories of information held in tyre management software are identified and accessed 1.2 Categories of information relevant to organisation are identified 1.3 Information available for inputting into tyre management

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ELEMENTS	PERFORMANCE CRITERIA
	software is identified
2. Use tyre management software	2.1 Data is identified and accessed using software 2.2 Completed tasks are entered into software 2.3 Work processes that require information from tyre management software are identified 2.4 Data and information on current tyre performance are obtained from tyre management software
3. Make decisions using information from tyre management software	3.1 Tyre management software is interrogated to find required current, historical or predicted information 3.2 Information is interpreted and analysed 3.3 Actions are taken in response to information, according to workplace procedures and Australian standards
4. Monitor the use of tyre management software	4.1 Tyre management software is routinely monitored 4.2 Use and performance of tyre management software are reviewed with team
5. Support others to use tyre management software	5.1 Regular ***communication*** with team or other work groups is undertaken 5.2 Improvements to software and team use of software are identified 5.3 Actions to implement improvements are taken and recorded

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Reading skills to:	• read and interpret workplace procedures and Australian standards • interpret and analyse written information on tyre performance.
Writing skills to:	• document performance improvement actions • complete a range of workplace documentation.
Oral communication skills to:	• communicate performance information and receive feedback from team and other work groups • report tyre performance data results.
Numeracy skills to:	• read and interpret both metric and imperial systems of measurement. • interpret numerical tyre performance data.

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Skills	Description
Digital literacy skills to:	• manipulate data in tyre management software • produce reports using tyre management software.
Initiative skills to:	• plan and prioritise own work to achieve required outcomes.
Planning and organising skills to:	• use appropriate processes and procedures • recognise limitations and seek timely advice.
Self-management skills to:	• seek information and assistance as required to solve problems.
Problem-solving skills to:	• identify software deficiencies and determine required actions.
Teamwork skills to:	• monitor team use of software • support team to achieve required outcomes • identify team deficiencies and take appropriate action.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Communication must include:	• face to face • use of tyre management software.

Unit Mapping Information

No equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKKJ001 Manage use of tyre management software

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must have competently used tyre management software on a minimum of three occasions, inputting and accessing at least two different types of tyre reports.

Individuals must demonstrate they can:

- communicate effectively with team regarding software and its use
- input and access data into tyre management software
- prioritise own work
- read, interpret and analyse tyre management information
- use basic and advanced computer functions that support the use of tyre management software.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- basic and advanced computer functions relating to tyre management software
- Australian standards and workplace procedures relating to tyre management
- key features of the following types of tyre reports:
  - end of month reports
  - health safety and environment (HSE) reports
  - job safety analysis reports
  - rim reports
  - tyre failure reports
  - tyre maintenance reports
- tyre management software.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the tyre management software that they have worked on, e.g. tyre reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- Australian standards and workplace procedures relevant to tyre management
- a range of tyre reports
- tyre management software.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTA001 Synchronise plant and equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to synchronise plant and equipment. It involves preparing for the task, selecting the correct synchronising procedure, carrying out the synchronisation, performing post-synchronising testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The plant and equipment include those of agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to undertake	1.1 Job requirements are determined according to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
synchronising operations	instructions 1.2 Synchronisation procedures and information are sourced and interpreted 1.3 Options for synchronisation are analysed and those most appropriate to the circumstances are selected and prepared 1.4 Hazards associated with the work are identified and risks are managed 1.5 Synchronisation tools and equipment are selected and checked for serviceability 1.6 Technical and calibration requirements for synchronisation are sourced, and support equipment is identified and prepared
2. Conduct synchronising operations	2.1 Synchronising procedures are carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Synchronising documentation is completed and reported according to workplace procedures
3. Analyse results	3.1 Operational tests are carried out and results are compared with manufacturer specifications 3.2 Results are documented and reported according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and plant and equipment are presented ready for use, including protective guards, safety features and cowlings 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking synchronising specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting synchronising tests, and recording parts and material used.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• measure plant and equipment components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, pressures, tolerances and deviations from manufacturer specifications • interpret test meters and equipment scales.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use synchronising test equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • operating engines
	  • following electrical safety requirements
	  • isolating and stabilising plant and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of oils or fluids released from plant and equipment during synchronisation process.

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Unit Mapping Information

Equivalent to AURKTA3001 Synchronise plant and equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTA001 Synchronise plant and equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- synchronise two different pieces of plant and equipment, in which the work must involve:
  - selecting synchronising procedures appropriate to the circumstances
  - synchronising the plant and equipment
  - testing and inspecting synchronised plant and equipment.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to synchronising plant and equipment, including procedures for:
  - operating engines
  - following electrical safety requirements
  - isolating and stabilising plant and equipment
- environmental requirements, including procedures for trapping, storing and disposing of oils or fluids released from plant and equipment during synchronisation process
- operating principles of plant and equipment and associated components, including:
  - electrical
  - hydraulic
  - mechanical
- plant and equipment synchronisation procedures, including:
  - electrical:
    - connect and disconnect

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    - electronic control module
    - electronic control of implement settings and adjustments
  - hydraulic:
    - connect and disconnect
    - pressure adjustment
    - fluid, leaks, and pressures
  - mechanical:
    - weight
    - power take-off (PTO)
    - three point linkage
    - towed implement
- post-synchronisation testing procedures for plant and equipment, including operational test procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the plant and equipment that they have synchronised, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer plant and equipment synchronisation specifications
- two different pieces of plant and equipment for synchronisation
- test equipment for synchronising plant and equipment
- tools, equipment and materials appropriate for synchronising plant and equipment.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTA002 Inspect, service and repair crop harvesting equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, service and repair faults in crop harvesting equipment. It involves preparing for the task, inspecting the equipment to determine the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The crop harvesting equipment is that of agricultural machinery and refers to the specialised equipment involved in harvesting crops, such as grain, sugar cane, cotton, rice, vegetable and fruit crops. It does not cover generalised equipment and systems that form the platform or the towing vehicle. This unit is not for the cutting, raking or harvesting of hay.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect crop harvesting equipment	1.1 Job requirements are determined from workplace instructions 1.2 Inspection procedures and information for crop harvesting equipment are sourced and interpreted 1.3 Options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Conduct inspection and analyse results	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, and include recommendations for necessary service, repairs or adjustments
3. Service and repair crop harvesting equipment	3.1 Service and repair procedures and information are sourced and interpreted 3.2 Service and repair tools, equipment and materials are selected and checked 3.3 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.5 Equipment and systems are test run and adjustments are carried out as required
4. Prepare equipment for operation	4.1 Variable operating parameters are identified from manufacturer specifications and analysis of proposed work environment and conditions 4.2 Equipment variables, including management system settings, controls and monitoring systems are established and prepared for proposed operations 4.3 Equipment and systems are test run and final adjustments are made 4.4 Post-repair testing is carried out according to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and equipment is presented ready for use, including ensuring that protective guards, safety features and cowlings are in place 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking harvesting equipment specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify workplace instructions and determine job requirements.
Numeracy skills to:	• measure crop harvesting equipment components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • understand measuring and test equipment divisions.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within

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Skills	Description
	workplace timeframes.
Technology skills to:	• operate crop harvesting diagnostic test equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures:
	  • isolating and stabilising equipment and machines
	  • working with rotating shafts
	• environmental requirements, including procedures for waste management, machine hygiene, dust and clean-up management.

Unit Mapping Information

Equivalent to AURKTA3002 Inspect, service and repair crop harvesting equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTA002 Inspect, service and repair crop harvesting equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, service and repair two different crop harvesting equipment, which must include equipment that harvests one of the following crop types:
  - grain
  - sugar cane
  - cotton
  - rice
  - potatoes
  - vegetable
  - fruit.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, servicing and repairing crop harvesting equipment, including procedures for:
  - isolating and stabilising equipment and machines
  - working with rotating shafts
- environmental requirements, including procedures for waste management, machine hygiene, dust and clean-up management
- operating principles of crop harvesting equipment, including:
  - threshing
  - air flow systems

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  - variable speed drives
  - sheaves
  - eccentric drives
  - rotor separation systems
- application, purpose and operation of crop harvesting equipment, including:
  - cutting and feeding systems
  - threshing and separation systems
  - trash ejection
  - grain or crop handling
  - electronic monitoring systems
- inspection procedures for harvesting equipment, including:
  - component wear analysis
  - system operation analysis
  - electronic fault code interrogation
- service and repair procedures for harvesting equipment, including removing, replacing, repairing and adjusting equipment components
- post-repair testing procedures for harvesting equipment, including:
  - variable operating parameters
  - impact of environmental factors.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the crop harvesting equipment that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- manufacturer harvesting equipment specifications
- two different operational crop harvesting equipment requiring service and repair
- diagnostic equipment for crop harvesting equipment
- tools, equipment and materials appropriate for inspecting, servicing, repairing and adjusting crop harvesting equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTA003 Inspect, service and repair crop planting and seeding equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, service and repair faults in crop planting and seeding equipment. It involves preparing for the task, inspecting the equipment to determine the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The crop planting and seeding equipment is that of agricultural machinery and refers to specialised equipment involved in planting and seeding. It does not cover generalised equipment and systems that form the platform or the towing vehicle. Work involves purpose-designed and constructed crop planting and seeding and air seeding equipment, which may be self-propelled or towed.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect crop planting and seeding equipment	1.1 Job requirements are determined from workplace instructions 1.2 Inspection procedures and information are sourced and interpreted 1.3 Options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Conduct inspection and analyse results	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, and include recommendations for necessary service, repairs or adjustments
3. Service and repair crop planting and seeding equipment	3.1 Service and repair procedures and information are sourced and interpreted 3.2 Service and repair tools, equipment and materials are selected and checked 3.3 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.5 Equipment and systems are test run and adjustments are carried out as required
4. Prepare equipment for operation	4.1 Variable operating parameters are identified from manufacturer specifications and analysis of proposed work environment and conditions 4.2 Equipment variables, including management system settings, controls and monitoring systems, are established and prepared for proposed operations 4.3 Equipment and systems are test run and final adjustments are carried out 4.4 Post-repair testing is carried out according to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and equipment is presented ready for use, including ensuring that protective guards, safety features and cowlings are in place 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking crop planting and seeding equipment specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify workplace instructions and determine job requirements.
Numeracy skills to:	• measure crop planting and seeding equipment components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • understand measuring and test equipment divisions.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within

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Skills	Description
	workplace timeframes.
Technology skills to:	• operate crop planting and seeding diagnostic test equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • isolating and stabilising equipment and machines
	  • working with rotating shafts and crushing hazards
	• environmental requirements, including procedures for waste management, machine hygiene, dust and clean-up management.

Unit Mapping Information

Equivalent to AURKTA3003 Inspect, service and repair crop planting and seeding equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTA003 Inspect, service and repair crop planting and seeding equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, service and repair:
  - one air feed crop planting and seeding equipment
  - one conventional feed crop planting and seeding equipment.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, servicing and repairing crop planting and seeding equipment, including procedures for:
  - isolating and stabilising equipment and machines
  - working with rotating shafts and crushing hazards
- environmental requirements, including procedures for waste management, machine hygiene, dust and clean-up management
- operating principles of crop planting and seeding equipment, including air feed and conventional planting and seeding systems
- application, purpose and operation of crop planting and seeding equipment, including:
  - electronic monitoring system
  - metering system
  - seeding delivery system
  - adjustable tine tension system
  - adjustable press wheels
- inspection procedures for crop planting and seeding equipment, including:

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  - component wear analysis
  - system operation analysis
  - electronic fault code interrogation
- service and repair procedures for crop planting and seeding equipment, including:
  - removing, replacing, repairing and adjusting crop planting and seeding equipment
  - adjusting pressure, volume and coverage of crop planting and seeding equipment
- post-repair testing procedures for crop planting and seeding equipment, including:
  - variable operating parameters
  - impact of environmental factors.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the crop planting and seeding equipment that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer crop planting and seeding equipment specifications
- crop planting and seeding equipment specified in the performance evidence and requiring service and repair
- diagnostic equipment for crop planting and seeding equipment
- tools, equipment and materials appropriate for inspecting, servicing, repairing and adjusting crop planting and seeding equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTA004 Inspect, service and repair spraying and spreading equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, service and repair faults in spraying and spreading equipment. It involves preparing for the task, inspecting the equipment to determine the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The spraying and spreading equipment is that of agricultural machinery and refers to specialised equipment that may be self-propelled, trailed or three-point linkage, with controls for pressure, volume and coverage. It does not cover generalised equipment or systems that form the platform or the towing vehicle.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect spraying and spreading equipment	1.1 Job requirements are determined from workplace instructions 1.2 Inspection procedures and information are sourced and interpreted 1.3 Options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Conduct inspection and analyse results	2.1 Inspection of ***spraying equipment*** and ***spreading equipment*** is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, and include recommendations for necessary service, repairs or adjustments
3. Service and repair spraying and spreading equipment	3.1 Service and repair procedures and information are sourced and interpreted 3.2 Service and repair tools, equipment and materials are selected and checked 3.3 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.5 Equipment and systems are test run and adjustments are carried out as required
4. Prepare equipment for operation	4.1 Variable operating parameters are identified from manufacturer specifications and analysis of proposed work environment and conditions 4.2 Equipment variables, including management system settings, controls and monitoring systems, are established and prepared for proposed operations 4.3 Equipment and systems are test run and final adjustments are carried out 4.4 Post-repair testing is carried out according to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and equipment is presented ready for use, including ensuring that protective guards, safety features and cowlings are in place 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking spraying and spreading equipment specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify workplace instructions and determine job requirements.
Numeracy skills to:	• measure spraying and spreading equipment components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • understand measuring and test equipment divisions.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within

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Skills	Description
	workplace timeframes.
Technology skills to:	• operate spraying and spreading diagnostic test equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Spraying equipment must include:	• equipment to distribute:
	  • liquid pesticides
	  • herbicides
	  • fertilisers.

Spreading equipment must include:	• equipment to distribute:
	  • solids
	  • semi-solids, including fertilisers and waste products.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with:
	  • spraying chemicals
	  • high pneumatic and hydraulic pressures
	  • rotating shafts
	• environmental requirements, including procedures for waste and chemical management, machine hygiene, dust and clean-up management.

Unit Mapping Information

Equivalent to AURKTA3004 Inspect, service and repair spraying and spreading equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTA004 Inspect, service and repair spraying and spreading equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, service and repair:
  - one spraying equipment
  - one spreading equipment
- during above work, adjust flow and pressure of delivery system to manufacturer specifications.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, servicing and repairing spraying and spreading equipment, including procedures for working with:
  - spraying chemicals
  - high pneumatic and hydraulic pressures
  - rotating shafts
- environmental requirements, including procedures for waste and chemical management, machine hygiene, dust and clean-up management
- procedures for flushing chemicals from spraying and spreading equipment prior to inspect, service and repair work
- operating principles of spraying and spreading equipment, including:
  - pumps, pressure and flow
  - drive systems
- application, purpose and operation of spraying and spreading equipment, including:

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  - spraying equipment for distributing liquid pesticides, herbicides and fertilisers, including:
    - pumping system
    - nozzle liquid delivery system
    - mixing system
    - marking and covering system
    - electronic weed identification system
  - spreading equipment for distributing solids and semi-solids, including fertilisers and waste products:
    - distribution control
    - delivery system
    - pumping system
    - material handling and storage
- inspection procedures for spraying and spreading equipment, including:
  - component wear analysis
  - system operation analysis
  - electronic system interrogation
- service and repair procedures for spraying and spreading equipment, including:
  - removing, replacing and repairing components
  - adjusting pressure, volume and coverage of spraying and spreading equipment
- post-repair testing procedures for spraying and spreading equipment, including:
  - variable operating parameters
  - impact of environmental factors.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the spraying and spreading equipment that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer spraying and spreading specifications
- one spraying equipment and one spreading equipment requiring service and repair
- diagnostic equipment for spraying and spreading equipment
- tools and equipment appropriate for inspecting, servicing, repairing and adjusting spraying and spreading equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTA005 Inspect, service and repair track type drive and support systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, service and repair faults in track type drive and support systems. It involves preparing for the task, inspecting the system to determine the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The track type drive and support systems include those of agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect track type drive and support system	1.1 Job requirements are determined from workplace instructions 1.2 Inspection procedures and information are sourced and interpreted 1.3 Options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Conduct inspection and report results	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, and include recommendations for necessary service, repairs or adjustments
3. Service and repair track type drive and support system	3.1 Service and repair procedures and information are sourced and interpreted 3.2 Service and repair tools, equipment and materials are selected and checked 3.3 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.5 Post-repair testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and machinery is presented ready for use, including ensuring that protective guards, safety features and cowlings are in place 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking track type drive specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify workplace instructions and determine job requirements.
Numeracy skills to:	• measure track type drive and support system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • understand measuring and test equipment divisions.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use measuring equipment and wear gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • manually handling system components
	  • isolating and stabilising machines
	  • releasing track chain tensioner

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	• working with recoil spring stored energy • disassembling track chain tensioner • working with stored hydraulic pressure • environmental requirements, including procedures for: • trapping, storing and disposing of lubricants and fluids released from track type drive and support systems • waste management, machine hygiene, dust and clean-up management.

Unit Mapping Information

Equivalent to AURKTA3005 Inspect, service and repair track type drive and support systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTA005 Inspect, service and repair track type drive and support systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, service and repair one machine track type drive and support system, including four of the following components:
  - carrier roller
  - track roller
  - undercarriage idler
  - drive sprocket
  - track chain
  - recoil spring
  - track chain tensioner
  - track plate
  - track frame, including its alignment.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, servicing and repairing track type drive and support systems, including procedures for:
  - manually handling system components
  - isolating and stabilising machines
  - releasing track chain tensioner
  - working with recoil spring stored energy

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  - disassembling track chain tensioner
  - working with stored hydraulic pressure
- environmental requirements, including procedures for:
  - trapping, storing and disposing of lubricants and fluids released from track type drive and support systems
  - waste management, machine hygiene, dust and clean-up management
- operating principles of track type drive and support systems, including:
  - track system
  - undercarriage system
- application, purpose and operation of track type drive and support systems, including:
  - track links, pins, bushings and track shoes
  - undercarriage idlers, carrier rollers, drive sprockets, track chain tensioners, recoil spring, accumulator, track plate, track frame and guards
- inspection procedures for track type drive and support systems, including:
  - component wear analysis
  - system operation analysis
- diagnostic testing procedures for track type drive and support systems, including:
  - component wear analysis, including:
    - track links, pins, bushings and track shoes
    - undercarriage idlers, rollers, drive sprockets, tensioners, track frame and guards
  - track frame alignment
- reclamation principles of track type drive components
- service and repair procedures for track type drive and support systems, including removing, replacing, repairing and adjusting system components
- post-repair testing procedures for track type drive and support systems, including:
  - track tension adjustment
  - track frame alignment.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the track type drive and support systems that they have serviced and repaired, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer track type drive specifications
- machinery with track type drive and support system requiring service and repair
- track drive system inspection and measurement tools and gauges, including:
  - track chain, track link, pin, bushing and track shoe
  - undercarriage tensioner, roller, idler and drive sprocket
- tools, equipment and materials appropriate for inspecting, servicing, repairing and adjusting track type drive and support systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTA006 Analyse and evaluate faults in track type mobile plant transmission, steering and braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in track type mobile plant transmission, steering and braking systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The track type transmission, steering and braking systems include those of agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1 Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for track type mobile plant transmission, steering or braking system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Track type mobile plant transmission, steering or braking system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to track type mobile plant transmission, steering and braking systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised track type mobile transmission, steering and braking system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for tagging out and isolating machines • environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from transmission, steering and braking systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURKTA5006 Analyse and evaluate tracked mobile plant transmission, steering and braking systems faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTA006 Analyse and evaluate faults in track type mobile plant transmission, steering and braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - transmission system of a track type mobile plant machine
  - steering system of a different track type mobile plant machine
  - braking system of a third track type mobile plant machine.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in track type mobile plant transmission, steering and braking systems, including procedures for tagging out and isolating machines
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from transmission, steering and braking systems
- principles and processes involved in planning and implementing analysis and evaluation of faults in track type mobile plant transmission, steering and braking systems
- design and planning of diagnostic procedures of track type mobile plant transmission, steering and braking system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - pneumatic faults
  - electrical faults

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- procedures for analysing and evaluating track type mobile plant transmission, steering and braking system faults, including:
  - system failure analysis
  - component failure analysis
- types, functions, operation and limitations of the following systems:
  - transmissions, including:
    - continuously variable transmission (CVT)
    - powershift transmission
    - hydrostatic transmission
    - retarding system
  - steering and braking: including:
    - mechanical and hydraulic operated steering clutch and brake
    - independent drives
    - planetary and differential planetary
    - hydrostatic drive
    - single and multi-disc brake units
- testing procedures for track type mobile plant transmission, steering and braking systems, including:
  - system pressure, flow rates and temperature
  - transmission, steering and braking performance
  - stall testing
  - sensor, actuator and wiring harness integrity
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in track type mobile plant transmission, steering and braking systems
- procedures for documenting and reporting the analysis and evaluation process.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the track type mobile plant transmission, steering and braking systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer track type mobile plant transmission, steering and braking system specifications
- three different track type mobile plant machinery with transmission, steering and braking system faults
- diagnostic equipment for track type mobile plant transmission, steering or braking systems
- tools, equipment and materials appropriate for analysing and evaluating track type mobile plant transmission, steering and braking systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTA007 Analyse and evaluate faults in mobile plant hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in mobile plant hydraulic systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The hydraulic systems include those of agricultural machinery or mobile plant machinery, which may be wheeled or track type machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for mobile plant hydraulic system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 ***Testing equipment*** is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Mobile plant hydraulic system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 ***Tests*** are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to mobile plant hydraulic systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• determine and justify the rectification method.
Technology skills to:	• use specialised mobile plant hydraulic system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for tagging out and isolating machines • environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from hydraulic systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.
Testing equipment must include:	• stop watches, pressure gauges, flow meters, multimeters, electronic scan tools and temperature sensing devices.
Tests must include:	• pressure, flow and temperature, cycle time performance, filter inspection, sequencing, sensor and actuator integrity, and wiring harness integrity.

Unit Mapping Information

Equivalent to AURKTA5007 Analyse and evaluate mobile plant hydraulic system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTA007 Analyse and evaluate faults in mobile plant hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate faults in the mobile plant hydraulic system of three different mobile plant machinery using flow meters, pressure gauges and temperature sensing devices.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in mobile plant hydraulic systems, including procedures for tagging out and isolating machines
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from hydraulic systems
- principles and processes involved in planning and implementing analysis and evaluation of mobile plant hydraulic system faults
- design and planning of diagnostic procedures of mobile plant hydraulic system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - electrical faults
- procedures for analysing and evaluating mobile plant hydraulic system faults, including:
  - system failure analysis
  - component failure analysis
- types, functions, operation and limitations of hydraulic systems and components: including:

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  - reservoirs
  - accumulators
  - pumps
  - valves
  - actuators
  - motors
  - conductors and connectors
  - hydraulic fluids
  - hydraulic symbols and system schematic
- testing procedures of mobile plant hydraulic systems, including:
  - system pressure, flow rates and temperature
  - cycle time performance
  - sensor, actuator and wiring harness integrity
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in mobile plant hydraulic systems, including flow meters, pressure gauges and temperature sensing devices
- procedures for documenting and reporting the analysis and evaluation process.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant hydraulic systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant hydraulic system specifications
- three different mobile plant machinery with hydraulic system faults
- diagnostic equipment for mobile plant hydraulic systems

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- tools, equipment and materials appropriate for analysing and evaluating mobile plant hydraulic systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTA010 Inspect, service and repair hay cutting, raking and baling equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, service and repair faults in hay cutting, raking and baling equipment. It involves preparing for the task, inspecting the equipment to determine the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The hay cutting, raking and baling equipment is that of agricultural machinery and refers to specialised equipment involved in baling hay. It does not cover generalised equipment and systems that form the platform or the towing vehicle. This unit does not apply to the use of headers for grain, sugar cane, cotton, rice, vegetable and fruit crops.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect hay cutting, raking and baling equipment	1.1 Job requirements are determined from workplace instructions 1.2 Inspection procedures and information for ***hay cutting, raking and baling equipment*** are sourced and interpreted 1.3 Options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Conduct inspection and analyse results	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, and include recommendations for necessary service, repairs or adjustments
3. Service and repair equipment	3.1 Service and repair procedures and information are sourced and interpreted 3.2 Service and repair tools, equipment and materials are selected and checked 3.3 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.5 Equipment and systems are test run and adjustments are carried out as required
4. Prepare equipment for operation	4.1 Variable operating parameters are identified from manufacturer specifications and analysis of proposed work environment and conditions 4.2 Equipment variables, including management system settings, controls and monitoring systems, are established and prepared for proposed operations 4.3 Equipment and systems are test run and final adjustments are

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	made 4.4 Post-repair testing is carried out according to workplace procedures
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and equipment is presented ready for use, including ensuring that protective guards, safety features and cowlings are in place 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking equipment specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify workplace instructions and determine job requirements.
Numeracy skills to:	• measure equipment components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • understand measuring and test equipment divisions.

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Skills	Description
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use diagnostic equipment to interrogate electronic management system.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Hay cutting, raking and baling equipment must include:	• equipment for cutting and raking hay in preparation for baling • equipment that may be for baling round bales, or small and large rectangular bales.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • isolating and stabilising equipment and machines
	  • working with rotating shafts
	• environmental requirements, including procedures for waste management, machine hygiene, dust and clean-up management.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTA010 Inspect, service and repair hay cutting, raking and baling equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, service and repair:
  - hay cutting equipment
  - hay raking equipment
  - hay baling equipment, including one of the following:
    - round baler
    - small or large rectangular baler.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, servicing and repairing hay cutting, raking and baling equipment, including procedures for:
  - isolating and stabilising equipment and machines
  - working with rotating shafts
- environmental requirements, including procedures for waste management, machine hygiene, dust and clean-up management
- operating principles of equipment, including:
  - hay cutting equipment
  - hay raking equipment
  - hay baling equipment, including for round bales or small and large rectangular bales
- application, purpose and operation of hay cutting, raking and baling equipment, including:
  - hay cutting equipment:

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    - disc mowers
    - sickle bar mowers
  - hay raking equipment:
    - side delivery rakes
    - wheel rakes
    - tedders
  - round and rectangular hay baling equipment, including:
    - electronic monitoring control
    - pick-up and feed system
    - packing system
    - compression system
    - knotting system
    - ejection system
- inspection procedures for hay cutting, raking and baling equipment, including:
  - component wear analysis
  - system operation analysis
  - electronic fault code interrogation
- service and repair procedures for hay cutting, raking and baling equipment, including removing, replacing, repairing and adjusting hay cutting, raking and baling equipment components
- post-repair testing procedures for hay cutting, raking and baling equipment, including:
  - variable operating parameters
  - impact of environmental factors.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the hay cutting, raking and baling equipment that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer hay cutting, raking and baling equipment specifications
- operational hay cutting, raking and baling equipment specified in the performance evidence and requiring service and repair
- diagnostic equipment for hay cutting, raking and baling equipment
- tools, equipment and materials appropriate for inspecting, servicing, repairing and adjusting hay cutting, raking and baling equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTA011 Diagnose and repair mobile plant hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the hydraulic systems of mobile plant. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The mobile plant hydraulic systems include those in agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
1. Prepare to diagnose and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
repair mobile plant hydraulic system	1.2 ***Mobile plant hydraulic system*** diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose hydraulic system	2.1 ***Diagnostic tests*** are carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair hydraulic system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 ***Repairs*** and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking hydraulic system specifications and procedures • interpret hydraulic symbols and circuits.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure hydraulic system components and use basic mathematical operations, including addition, subtraction, multiplication and division to calculate: • distances, tolerances and deviations from manufacturer specifications • hydraulic system pressures, forces, distances and temperature • read precision measuring equipment, such as micrometers, vernier calipers, and flow, temperature and pressure gauges.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use hydraulic pressure gauges and flow meters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Mobile plant hydraulic system must include:	• reservoirs • accumulators • pumps

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	• valves • actuators • motors • filters • hoses, pipes, fittings and couplings.
Diagnostic tests must include:	• using pressure gauges and flow meters to determine system pressure settings, pump output and individual system component internal leakage.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using raising, lowering and supporting equipment
	  • isolating and stabilising machines
	  • working with stored hydraulic pressure
	  • working with escaping high pressure oil
	  • working with hot fluid hazards
	• environmental requirements, including procedures for trapping, storing and disposing of hydraulic fluid released from hydraulic systems.

Repairs must include:	• using pressure gauges and flow meters to set system pressure settings and adjust hydraulic valves.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTA011 Diagnose and repair mobile plant hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in the hydraulic systems of two different mobile plant or agricultural machinery, and:
  - remove, refit or replace two different types of hydraulic valves
  - remove, refit or replace one hydraulic cylinder
- in the course of the above work, undertake two the following:
  - rebuild hydraulic cylinder
  - rebuild motor or pump
  - remove, refit or replace hose
  - remove, refit or replace pump
  - remove, refit or replace motor
  - remove, refit or replace accumulator.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing mobile plant hydraulic systems, including procedures for:
  - using raising, lowering and supporting equipment
  - isolating and stabilising machines
  - working with stored hydraulic pressure
  - working with escaping high pressure oil

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  - working with hot fluid hazards
- environmental requirements, including procedures for trapping, storing and disposing of hydraulic fluid released from hydraulic systems
- AS 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- operating principles of hydraulic systems and associated components, including:
  - transmission of energy by hydraulic fluid
  - mechanical advantage
  - hydraulic circuits, including open and closed centred systems
  - temperature, force, pressure, area and flow
- application, purpose and operation of hydraulic systems and components, including:
  - reservoirs
  - gas loaded accumulators
  - pumps, including gear and piston
  - valves, including:

    directional control, including valve banks

    pressure control, including spike or circuit protection valving

    flow control, including meter in and meter out
  - linear and rotary actuators
  - hoses, pipes fittings and couplings
  - heat exchangers
  - hydraulic fluids
  - hydraulic system schematics
- diagnostic testing procedures for hydraulic systems, including:
  - applying and using a flow meter to diagnose faults by carrying out an in-line, bypass or ‘Tee’ test to evaluate system components
  - visually inspecting hoses, pipes and connectors
  - oil sampling and contamination control
- repair procedures for hydraulic systems, including procedures for removing, replacing, repairing and adjusting hydraulic system components
- post-repair testing procedures for hydraulic systems, including:
  - operational functionality
  - flow testing.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant hydraulic systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant hydraulic system specifications
- two different mobile plant or agricultural machinery with hydraulic systems requiring the work specified in the performance evidence
- diagnostic tools and equipment for hydraulic systems, including pressure gauges and flow meters
- AS 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- tools, equipment and materials appropriate for repairing and adjusting mobile plant hydraulic systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTB001 Diagnose and repair mobile plant braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the braking systems of agricultural machinery and mobile plant machinery. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The braking systems include those in agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical - Brakes

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair mobile plant braking system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose braking system	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair braking system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked according to manufacturer procedures 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking braking system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure braking system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • interpret braking system hydraulic pressure gauges.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• operate diagnostic and testing equipment • conduct performance testing of components, systems and equipment • use braking system measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with high fluid pressure and high pneumatic pressure
	  • working with stored hydraulic accumulator pressures and

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	stored pneumatic pressures • isolating and stabilising machines • environmental requirements, including procedures for trapping, storing and disposing of hydraulic fluids, brake fluids and brake fibres released from braking systems.

Unit Mapping Information

Equivalent to AURKTB3001 Diagnose and repair mobile plant braking systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTB001 Diagnose and repair mobile plant braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in two different spring applied hydraulically released mobile plant braking systems
- diagnose and repair a fault in one of the following mobile plant braking systems:
  - hydraulic applied
  - full air actuated
  - air over full hydraulic.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing mobile plant braking systems, including procedures for:
  - working with high fluid pressure and high pneumatic pressure
  - working with stored hydraulic accumulator pressures and stored pneumatic pressures
  - isolating and stabilising machines
- environmental requirements, including procedures for trapping, storing and disposing of hydraulic fluids, brake fluids and brake fibres released from braking systems
- operating principles of mobile plant braking systems and associated components, including:
  - levers
  - friction
  - pneumatics

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  - hydraulics, including the relationship between force, pressure and area
- mobile plant braking systems, including:
  - multi-disc wet braking systems, including associated cooling systems
  - disc braking systems
  - parking brake systems
- application, purpose and operation of mobile plant braking systems and components, including:
  - air over full hydraulic
  - full air actuated
  - hydraulic applied
  - spring applied hydraulically released
- diagnostic testing procedures for mobile plant braking systems, including:
  - component wear analysis
  - system operation analysis
- repair procedures for mobile plant braking systems, including procedures for repairing and adjusting the following braking system components:
  - multi-disc wet braking systems, including wheel end and inboard mounted
  - disc braking systems
  - parking brake systems
- post-repair testing procedures for mobile plant braking systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- workplace instructions
- manufacturer mobile plant braking system specifications
- three different mobile plant braking systems specified in the performance evidence
- diagnostic equipment for mobile plant braking systems
- tools, equipment and materials appropriate for repairing and adjusting mobile plant braking systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTB002 Analyse and evaluate faults in wheeled mobile plant braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in wheeled mobile plant braking systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The braking systems include those of agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical - Brakes

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Workplace instructions and reports are used to determine the objective of the analysis and evaluation requirements 1.2 Benchmark specifications for wheeled mobile plant braking system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Wheeled mobile plant braking system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 ***Tests*** are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements and financial implications 4.3 Report is prepared specifying the analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying the rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to wheeled mobile plant braking systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised wheeled mobile plant braking system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for tagging out and isolating machines • environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from braking systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.
Tests must include:	• accumulator pressure • disc stack height • pressure • system performance with regard to distance and balance • sensor, actuator and wiring harness integrity • sampling collection and processing • wear analysis relating to drums, discs and lining material • analysis of diagnostic systems.

Unit Mapping Information

Equivalent to AURKTB5002 Analyse and evaluate wheeled mobile plant braking system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTB002 Analyse and evaluate faults in wheeled mobile plant braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the braking systems of three different wheeled mobile plant machinery
- the above analysis and evaluation must involve two of the following systems:
  - hydraulic
  - mechanical
  - pneumatic
  - electronic.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in wheeled mobile plant braking systems, including procedures for tagging out and isolating machines
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from braking systems
- principles and processes involved in planning and implementing analysis and evaluation of wheeled mobile plant braking system faults
- design and planning of diagnostic procedures of wheeled mobile plant braking system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - pneumatic faults

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    - electrical faults
- procedures for analysing and evaluating wheeled mobile plant braking system faults, including:
    - system failure analysis
    - component failure analysis
- types, functions, operation and limitations of the following systems, including:
    - foundation brakes
    - anti-lock braking (ABS) with traction control
    - air over hydraulic brakes
    - air brakes
    - full hydraulic brakes
    - auxiliary braking systems, including hydraulic retarders
- testing procedures of wheeled mobile plant braking systems, including:
    - system pressure, flow rates and temperature
    - braking distance and balance
    - accumulator pressure
    - disc stack height
    - component wear analysis
    - hydraulic retarders
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in wheeled mobile plant braking systems
- procedures for documenting and reporting the analysis and evaluation process.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the wheeled mobile plant braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer wheeled mobile plant braking system specifications
- three different wheeled mobile plant machinery with braking system faults
- diagnostic equipment for wheeled mobile plant braking systems
- tools, equipment and materials appropriate for analysing and evaluating wheeled mobile plant braking systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTD002 Diagnose and repair mobile plant steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the steering systems of mobile plant. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The steering systems include those in agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical - Steering and Suspension

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
repair mobile plant steering system	1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose steering system	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair steering system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked according to manufacturer procedures 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking steering system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure steering system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • interpret steering system hydraulic pressure gauges.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• operate diagnostic and testing equipment • conduct performance testing of components, systems and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • isolating and locking articulated steering systems
	  • isolating and stabilising machines
	  • working with stored fluid pressures from accumulators
	  • working with high pressure fluid hazards

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	• using lifting, jacking and supporting equipment • environmental requirements, including procedures for trapping, storing and disposing of hydraulic fluid released from steering systems.

Unit Mapping Information

Equivalent to AURKTD3002 Diagnose and repair mobile plant steering systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTD002 Diagnose and repair mobile plant steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in three mobile plant steering systems as follows:
  - one articulated steering system
  - two of the following systems:
    - front wheel steering
    - all wheel steering
    - differential steer
    - steering clutch and brake
- inspect and charge one accumulator according to manufacturer specifications and relevant Australian standards.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing mobile plant steering systems, including procedures for:
  - isolating and locking articulated steering systems
  - isolating and stabilising machines
  - working with stored fluid pressures from accumulators
  - working with high pressure fluid hazards
  - using lifting, jacking and supporting equipment
- environmental requirements, including procedures for trapping, storing and disposing of hydraulic fluid released from steering systems

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- operating principles of mobile plant steering systems and associated components, including full hydraulic steering and:
  - safety protection valves in the circuits
  - hand metering units (HMUs) and flow amplifier
  - hydraulic and electrohydraulic control
  - accumulator steering circuit
- application, purpose and operation of mobile plant steering systems and components, including:
  - articulated steering
  - front wheel steering
  - all wheel steering
  - differential steer
  - steering clutch and brake
- identification, function and adjustment of toe-in and toe-out steering angles
- diagnostic testing procedures for mobile plant steering systems, including:
  - pressure and flow testing the system and individual components
  - accumulator tests
  - HMU and flow amplifier tests
  - testing the pressure settings on all safety protection valves in the circuit
- repair and adjustment procedures for mobile plant steering systems, including:
  - accumulator inspection and charging procedures that reflect manufacturer specifications and Australian standards
  - pressure settings and adjustment procedures for main and safety protection valves in the steering circuit
- post-repair testing procedures for mobile plant steering systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant steering systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant steering system specifications
- three different mobile plant steering systems specified in the performance evidence with system faults
- diagnostic equipment for mobile plant steering systems
- tools, equipment and materials appropriate for repairing and adjusting mobile plant steering systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTD003 Analyse and evaluate faults in wheeled mobile plant steering and suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in wheeled mobile plant steering and suspension systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The steering and suspension systems include those of agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for wheeled mobile plant steering or suspension system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Wheeled mobile plant steering or suspension system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements and financial implications 4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to wheeled mobile plant steering and suspension systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

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Skills	Description
Technology skills to:	• use specialised wheeled mobile plant steering and suspension system diagnostic equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • isolating and locking articulated steering systems
	  • tagging out and isolating machines
	• environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from steering and suspension systems.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURKTD5003 Analyse and evaluate wheeled mobile plant steering and suspension system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTD003 Analyse and evaluate faults in wheeled mobile plant steering and suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - steering system of a wheeled mobile plant machine
  - suspension system of a different wheeled mobile plant machine
  - steering or suspension system of a third wheeled mobile plant machine.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in wheeled mobile plant steering and suspension systems, including procedures for:
  - isolating and locking articulated steering systems
  - tagging out and isolating machines
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from steering and suspension systems
- principles and processes involved in planning and implementing analysis and evaluation of faults in wheeled mobile plant steering and suspension systems
- design and planning of diagnostic procedures of wheeled mobile plant steering and suspension system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - electrical faults

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- procedures for analysing and evaluating wheeled mobile plant steering and suspension system faults, including:
  - system failure analysis
  - component failure analysis
- types, functions, operation and limitations of the following systems, including:
  - steering system and components, including:
    - steering system theory
    - power assisted steering
    - hydrostatic steering
    - electrohydraulic steering
    - steer-by-wire steering
    - influences of trailer operations on mobile plant steering performance
  - suspension system and components, including:
    - wheels and tyres
    - equalising beam suspension
    - rigid frame suspension
    - oscillating axle suspension
    - hydrostatic suspension
    - gas charged hydraulic suspension
    - cushion hitch suspension
    - influences of trailer operations on mobile plant suspension performance
- testing procedures of wheeled mobile plant steering and suspension systems, including:
  - system pressure, flow rates and temperature
  - accumulator pressure
  - component wear analysis
  - suspension levellers
  - sensor, actuator and wiring harness integrity
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in wheeled mobile plant steering and suspension systems
- procedures for documenting and reporting the analysis and evaluation process.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the wheeled mobile plant steering and suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer wheeled mobile plant steering and suspension system specifications
- three different wheeled mobile plant machinery with steering and suspension system faults
- diagnostic equipment for wheeled mobile plant steering and suspension systems
- tools, equipment and materials appropriate for analysing and evaluating wheeled mobile plant steering and suspension systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTD004 Analyse and evaluate faults in track type mobile plant undercarriage and suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in track type mobile plant undercarriage and suspension systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The track type undercarriage and suspension systems include those of agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for track type mobile plant undercarriage or suspension system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Track type mobile plant undercarriage or suspension system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements and financial implications 4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to track type mobile plant undercarriage and suspension systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

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Skills	Description
Technology skills to:	• use specialised diagnostic equipment for track type mobile plant undercarriage and suspension systems.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for tagging out and isolating machines • environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from undercarriage and suspension systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURKTD5004 Analyse and evaluate tracked mobile plant undercarriage and suspension system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTD004 Analyse and evaluate faults in track type mobile plant undercarriage and suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - undercarriage system of a track type mobile plant machine
  - suspension system of a different track type mobile plant machine
  - undercarriage or suspension system of a third track type mobile plant machine.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in track type mobile plant undercarriage and suspension systems, including procedures for tagging out and isolating machines
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from undercarriage and suspension systems
- principles and processes involved in planning and implementing analysis and evaluation of faults in track type mobile plant undercarriage and suspension systems
- design and planning of diagnostic procedures of track type mobile plant undercarriage and suspension system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - electrical faults
- procedures for analysing and evaluating track type mobile plant undercarriage and suspension system faults, including:

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    - system failure analysis
    - component failure analysis
- types, functions, operation and limitations of the following systems, including:
    - undercarriage system and components, including:
        - track
        - rollers
        - idlers
        - frames
        - recoil mechanisms
    - suspension system and components, including:
        - rigid platform
        - low track
        - live axle
        - dead axle
        - elevated sprocket
        - equaliser bars
        - oscillating undercarriage
- testing procedures of track type mobile plant undercarriage and suspension systems, including:
    - component wear analysis
    - track alignment
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in track type mobile plant undercarriage and suspension systems
- procedures for documenting and reporting the analysis and evaluation process.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the track type mobile plant undercarriage and suspension systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer track type mobile plant undercarriage and suspension system specifications
- three different track type mobile plant machinery with undercarriage and suspension system faults
- diagnostic equipment for track type mobile plant undercarriage and suspension systems
- tools, equipment and materials appropriate for analysing and evaluating track type mobile plant undercarriage and suspension systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTE001 Analyse and evaluate faults in mobile plant engine and fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in mobile plant engine and fuel systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The engine and fuel systems include those of agricultural machinery or mobile plant machinery, which may be wheeled or track type machinery.

This unit does not apply to heavy commercial vehicle engines and fuel systems.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical - Engines

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for mobile plant engine or fuel system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Mobile plant engine or fuel system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to mobile plant engine and fuel systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised mobile plant engine and fuel system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with high pressure fuel hazards
	  • tagging out and isolating machines
	• environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from engine and fuel systems.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURKTE5001 Analyse and evaluate mobile plant engine and fuel system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTE001 Analyse and evaluate faults in mobile plant engine and fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - engine system of a mobile plant machine
  - fuel system of a different mobile plant machine
  - engine or fuel system of a third mobile plant machine.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in mobile plant engine and fuel systems, including procedures for:
  - working with high pressure fuel hazards
  - tagging out and isolating machines
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from engine and fuel systems
- principles and processes involved in planning and implementing analysis and evaluation of mobile plant engine and fuel system faults
- design and planning of diagnostic procedures of mobile plant engine and fuel system faults, including procedures for diagnosing:
  - mechanical faults
  - electrical faults
  - fuel system faults

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- procedures for analysing and evaluating mobile plant engine and fuel system faults, including:
  - system failure analysis
  - component failure analysis
- types, functions, operation and limitations of the following systems:
  - engine and components
  - fuel system and components
- impact of other associated vehicle systems on mobile plant engine and fuel system operation, including:
  - engine electrical system and components
  - intake system and components, including:
    - air charge cooling
    - after/inter-cooling arrangements
  - exhaust system and components, including single and multi-staged turbo charging
  - lubrication system and components
  - cooling system and components
- testing procedures for mobile plant engine and fuel systems, including:
  - engine wear analysis
  - engine performance
  - intake, exhaust, crank case and turbocharger boost
  - exhaust gas analysis
  - sensor, actuator and wiring harness integrity
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in mobile plant engine and fuel systems
- procedures for documenting and reporting the analysis and evaluation process.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant engine and fuel systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant engine and fuel system specifications
- three different mobile plant machinery with engine and fuel system faults
- diagnostic equipment for mobile plant engine and fuel systems
- tools, equipment and materials appropriate for analysing and evaluating mobile plant engine and fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTJ004 Conduct non-destructive testing of wheel and rim assemblies

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to conduct non-destructive testing of vehicle wheel and rim assemblies. It requires the ability to use technical skills to prepare for and conduct non-destructive testing.

It applies to those who conduct non-destructive testing of vehicle wheels and rims in order to determine their serviceability by checking for material defects and malfunctions.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare for non-destructive testing	1.1 Workplace procedures and manufacturer instructions are used to determine job requirements 1.2 Inspection area is cleaned and prepared for testing using workplace materials and in line with required procedures 1.3 Tools and equipment are checked for safety and serviceability

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ELEMENTS	PERFORMANCE CRITERIA
	1.4 Non-destructive test equipment is prepared according to manufacturer instructions and workplace procedures 1.5 Work area and equipment problems are reported to appropriate personnel
2. Perform non-destructive testing	2.1 Testing methods are determined in line with workplace procedures and manufacturer specifications 2.2 Hazards and safety requirements associated with testing are identified and addressed 2.3 Testing is performed according to workplace procedures and manufacturer instructions 2.4 Non-conformance and defects are identified against workplace procedures and manufacturer instructions 2.5 Test results are verified and documented according to workplace procedures
3. Clean work area	3.1 Testing equipment is maintained and stored according to workplace procedures 3.2 Work area is cleaned and prepared for subsequent use

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description

Reading skills to:	• read and interpret information in:
	  • written workplace procedures
	  • manufacturer instructions
	  • charts, lists, drawings and other applicable documents
	• collect, analyse, organise and understand information relating to non-destructive test results.

Writing skills to:	• produce reporting documentation detailing non-destructive test results.
Oral communication skills to:	• confirm work requirements • report work outcomes and problems.
Numeracy skills to:	• read and interpret both metric and imperial systems of measurement. • read and interpret mathematical information including: • charts and drawings

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Skills	Description
	• use mathematical ideas and techniques to complete measurements and estimate material requirements required for non-destructive testing.
Planning and organising skills to:	• prepare and lay out work area, and obtain equipment and material to avoid wastage, backtracking and workflow interruptions.
Teamwork skills to:	• work with team members, such as technical supervisors, technicians and workers.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTJ004 Conduct non-destructive testing of wheel and rim assemblies

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must have competently conducted non-destructive testing on wheels and rims on a minimum of four occasions, using at least two of the following hardness testing methods:

- penetrant
- magnetic
- Rockwell
- Brinell.

Individuals must demonstrate they can:

- prepare equipment for testing, including zeroing and calibration checks
- select and apply testing methods
- verify test results
- record test outcomes.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- principles and methods of penetrant, magnetic, Rockwell and Brinell hardness testing, and limitations, advantages and hazards associated with the testing
- non-destructive testing terminology
- non-destructive test equipment use, maintenance and storage
- non-destructive testing preparation procedures
- non-destructive testing verification methods and techniques
- non-destructive testing analysis techniques
- reporting and recording procedures relevant to non-destructive testing.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the equipment that they have worked on, e.g. test results.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- Australian standards relevant to the non-destructive testing of wheel and rim assemblies
- workplace procedures and manufacturer instructions
- non-destructive testing equipment
- workplace location or simulated workplace.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTJ011 Remove, inspect and fit earthmoving and off-the-road tyres

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to remove, inspect and fit earthmoving and off-the-road (OTR) tyres to construction and mining vehicles. It involves removing the tyre from the rim, identifying and controlling risks, inspecting the tyre, assembling the wheel and rim, recommending required repair action, inflation, deflation, and preparing the tyre, wheel and rim assembly for use or storage.

It applies to those who fit tyres to wheel and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

Licensing, legislative, regulatory, Australian standards or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Technical - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Assess and control risks	1.1 Identify and control hazardous conditions in the work environment 1.2 Identify and apply safety requirements to control hazardous tyre, wheel and rim assembly conditions, noting points where safety checks are required 1.3 Obtain and interpret emergency procedures and be prepared for fires, accidents and emergencies

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ELEMENTS	PERFORMANCE CRITERIA
	1.4 Identify hazards and environmental issues, assess potential risks, and implement control measures in line with workplace policies
2. Prepare to remove tyre from wheel or rim	2.1 Obtain and interpret manufacturer procedures original equipment manufacturer (OEM) specifications, workplace procedures, and applicable standards for earthmoving and off-the-road tyres 2.2 Obtain, interpret, clarify and confirm work requirements 2.3 Plan sequence of work, noting points where safety checks are required 2.4 Select and wear personal protective equipment required for the work activity 2.5 Coordinate and communicate planned activities with others at the site as per work requirements 2.6 Identify tyre, wheel and rim components 2.7 Select and inspect tools and equipment according to manufacturer instructions and workplace procedures 2.8 Prepare, clean and inspect tyre, wheel and rim assembly for damage, wear, corrosion, foreign material, cracks, and compatibility of component
3. Deflate and remove tyre from wheel or rim	3.1 Isolate, jack, raise and support vehicle according to workplace procedures 3.2 Deflate tyre according to manufacturer instructions and workplace procedures 3.3 Verify appropriate deflation of tyre in line with workplace procedures and OEM requirements 3.4 Apply workplace procedures for the safe removal and purging of hazardous fill substances 3.5 Remove tyre according to workplace procedures and without causing component damage or injury
4. Inspect tyre, wheel or rim and recommend repair and replacement actions for unserviceable components	4.1 Clean and visually inspect tyre, wheel or rim for serviceability and compatibility for application according to workplace procedures and OEM specifications 4.2 Record and report inspection findings according to workplace procedures 4.3 Document recommended repair and replacement actions and report to relevant personnel according to workplace procedures
5. Fit tyre to wheel or rim	5.1 Access and interpret workplace procedures and OEM specifications for fitting tyres 5.2 Assess need for tyre additive and nitrogen and add where required

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ELEMENTS	PERFORMANCE CRITERIA
	5.3 Fit tyre according to workplace and manufacturer procedures 5.4 Perform post-fit inspections of tyre, wheel and rim assembly according to workplace procedures to confirm correct assembly, component compatibility, serviceability, and correct seating of components prior to inflation
6. Inflate tyre	6.1 Identify and apply tyre inflation safety procedures 6.2 Inflate tyre for transport, storage or use according to workplace procedures and manufacturer specifications 6.3 Monitor tyre, wheel and rim assembly during inflation according to workplace procedures
7. Complete work processes	7.1 Perform final inspection to ensure work meets workplace requirements and OEM requirements 7.2 Prepare tyre, wheel and rim assembly for use or storage according to workplace procedures 7.3 Inspect and store tools and equipment according to workplace procedures, tagging or reporting where necessary 7.4 Complete workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance are not explicit in the performance criteria.

Skills	**Description**

Reading skills to:	• read and interpret:
	  • written information in workplace procedures, manufacturer instructions, and work health and safety (WHS) requirements relating to removing, inspecting and fitting earthmoving and off-the-road (OTR) tyres
	  • charts, lists, drawings and other applicable documents.

Writing skills to:	• document inspection findings and recommend repair and replacement actions • engage with workplace documents.
Oral communication skills to:	• ask questions to clarify inspection observations, instructions and procedures

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	• report inspection results • brief team and customers

Numeracy skills to:	• read and interpret metric and imperial systems of measurement
	• read and interpret mathematical information, including charts and drawings
	• use specialist tools and measuring equipment, including:
	  • gauges and pressure regulators
	  • pressure testing tools.

Digital literacy skills to:	• use workplace computerised technology and tools relating to the removal and refitting of earthmoving and OTR tyres.
Planning and organising skills to:	• plan and prioritise own work to achieve required outcomes • plan appropriate risk controls to minimise risks before, during and after the tyre fitting process.
Self-management skills to:	• select and use appropriate equipment, materials, processes and procedures • recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• seek information and assistance as required to solve problems • identify tyre, wheel and rim assembly condition and performance • match tyres to wheel and rim assemblies and vehicle type.
Teamwork skills to:	• work alongside other team members in a work environment, including those fulfilling other roles, such as riggers, dogmen, mechanics, tyre fitters, drivers and site operators.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Safety requirements must include:	• those prescribed under applicable standards, WHS Acts and regulations, and workplace policies and procedures
	• isolation procedures
	• hazard control
	• manual-handling techniques
	• personal protective clothing and equipment
	• using tools and equipment
	• working with hazardous substances, including:
	  • nitrogen gas
	  • chemicals
	  • hydraulic pressure

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	• compressed air • polyurethane resin (PUR) tyre fill • tyre additive
Tools and equipment must include:	• tyre handling equipment • bead breakers • rim and wheel assembly stands • inspection stands • hand tools • inflation and deflation tools and pressure gauges • lock ring catcher • mufflers • pneumatic tools • hydraulic tools • power tools • soft face hammers • support stands or jacks • torque tools • tyre levers • wire brushes • air compressors • gauges
Hazardous conditions must include:	• changing and unstable ground conditions • dust • sparks from use of grinders • hard, soft or uneven ground conditions • line of fire during inflation of tyre, wheel or rim assembly • noise • vehicles/pedestrians/machinery/other personnel within the workplace • handling of tyres, rim components and assemblies
Hazardous tyre and wheel or rim conditions must include:	• damage • wear • corrosion • foreign material • cracks • heat damage, including pyrolysis • compatibility of rim components • hazardous fill substances, including nitrogen gas, calcium chloride and polyurethane resin (PUR) • under- or over-inflated tyre
Rim and wheel component	• adaptor rings and plates

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assemblies must include:	• bolts • cleats • nuts • reducers • spacer bands • studs • washers • wedge bands • wedges

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURKTJ011 Remove, inspect and fit earthmoving and off-the-road tyres (Release 1)	AURKTJ001 Remove, inspect and fit earthmoving and off-the-road tyres (Release 2)	Updates to elements and performance criteria, range of conditions, performance and knowledge evidence to ensure safety aspects have been included.	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTJ011 Remove, inspect and fit earthmoving and off-the-road tyres

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate removing, inspecting, and refitting industrial earthmoving and off-the-road (OTR) tyres and tubes that safely follows workplace procedures to meet required outcomes on a minimum of three occasions. The candidate must:

- locate and interpret required documentation, policies and procedures
- complete workplace documentation, including:
  - risk assessments
  - work health and safety (WHS) documentation
  - workplace tyre change documentation.
- mitigate site and task hazards, including one of the following hazardous substances:
  - chemicals
  - hydraulic pressure
  - compressed air
  - nitrogen gas
  - polyurethane resin (PUR) tyre fill
  - tyre additive
- identify tyre profile and matching requirements
- identify and control hazardous conditions, including:
  - inspection of tyres, wheel and rim assemblies for:
    - damage
    - wear
    - corrosion
    - foreign material
    - cracks
    - heat damage, including pyrolysis
    - compatibility of components

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    - hazardous fill substances
    - the inspections listed above must take place on the following wheel and rim configurations:
        - three piece wheel or rim assembly
        - five piece wheel or rim assembly
        - split wheel or rim assembly
- deflate tyre and remove from wheel or rim without causing component damage
- clean and inspect tyre, wheel or rim assembly for serviceability
- inspect mounting components and fasteners for cleanliness, damage, wear, corrosion, foreign material and cracks
- fit tyre to wheel or rim and conduct post-fit inspection
- inflate tyre, monitoring tyre, and wheel or rim assembly throughout
- undertake post-work inspection and complete work processes

The above work must be performed on tyres fitted to wheel or rim assemblies of not less than 600 mm (24 inches) nominal diameter In the course of the work above, tyre handling equipment must be utilised at least once.

Knowledge Evidence

The candidate must demonstrate the following knowledge:

- Key policies and procedures for removing, inspecting and fitting earthmoving and OTR tyres, including:
    - how to locate and interpret manufacturers specifications, applicable standards for earthmoving and OTR tyres, and workplace procedures for removing, inspecting and fitting earthmoving and off-the-road tyres
    - WHS requirements relevant to removing, inspecting and fitting earthmoving and OTR tyres
    - applicable standards, including Australian standards, and workplace policies relevant to removing, inspecting and fitting earthmoving and OTR tyres
    - procedures relating to earthmoving and OTR tyres:
        - hazard identification and risk control methods, including operating indoors and outdoors, as well as at night time
        - inflation and deflation, including pre- and post-checks
        - pre-removal inspection
        - ballast identification, types and application
        - tyre fill identification, types and application
        - tyre fill adding/removal methods
        - tyre additives types and applications
        - post-fitting inspection
        - serviceability requirements relating to tyres, wheels and rims
        - crack testing for rim components
    - removal procedures of earthmoving and OTR wheel and rim assemblies relating to:

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    - methods for undoing fasteners
    - methods for handling earthmoving and OTR wheel and rim assemblies
    - wheel and rim and components, including identification and matching criteria
    - split wheel
    - rim or hub-mounted multi-piece rim
    - one piece wheel and rim

- Earthmoving and OTR vehicle tyres, wheels and rim assembly information including:
  - types and classifications of earthmoving and OTR tyres, rims and wheel assemblies
  - types of mounting systems, tools and equipment for removing and fitting earthmoving and OTR wheel and rim assemblies
  - workplace tyre management systems, including:
    - paper-based tyre management systems
    - digital tyre management systems

Assessment Conditions

The assessment must:

- include access to:
  - a workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to removing, inspecting and fitting earthmoving and OTR tyres, wheels and rim assemblies
  - WHS requirements and workplace procedures relevant to removing, inspecting and fitting earthmoving and OTR tyres
  - manufacturer specifications and procedures or equivalent documentation to remove, inspect and fit earthmoving and OTR tyres
  - applicable standards for removing, inspecting and fitting earthmoving and OTR tyres, wheels and rim assemblies
  - tyre handing equipment, including one of the following:
    - crane
    - earthmoving and OTR tyre handler
    - forklift
    - grab truck
    - integrated tool handler
  - earthmoving and OTR tyres, wheels and rim assemblies of not less than 600mm (24 inches) nominal diameter
  - tyre, wheel and rim assembly specifications and workplace instructions

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    - tools and equipment required for removing, inspecting and fitting earthmoving and OTR tyres
    - personal protective clothing and equipment required for the activities described in the performance evidence be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTJ012 Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove, inspect and fit earthmoving and off-the-road (OTR) wheel and rim assemblies and fasteners for fitment. It involves assessing and controlling risks, preparing for the task, removing, inspecting and refitting wheel and rim assemblies, inflating the tyre and completing workplace processes and documentation.

It applies to those who fit wheel assemblies and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

Licensing, legislative, regulatory, Australian standards or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Technical - Wheels and Tyres

Elements and Performance Criteria

Elements Elements describe the essential outcomes	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Assess and control risk	1.1 Identify and control hazardous conditions in work environment 1.2 Identify and control hazardous wheel and rim assembly conditions, noting points where safety checks are required 1.3 Obtain and interpret emergency procedures and be prepared for fires, accidents and emergencies 1.4 Identify hazards and environmental issues, assess potential risks, and implement control measures in line with workplace policies

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2. Prepare to remove wheel and rim assembly from vehicle	2.1 Obtain and interpret manufacturer instructions, original equipment manufacturer (OEM) specifications, workplace procedures safety information and applicable standards for earthmoving and off-the-road tyres 2.2 Obtain, interpret, clarify and confirm work requirements 2.3 Plan sequence of work, noting points where safety checks are required 2.4 Select and wear personal protective equipment appropriate for work activities 2.5 Coordinate and communicate planned activities with others at the site prior to commencement of work activity 2.6 Select and inspect tools and equipment according to manufacturer instructions and workplace procedures 2.7 Identify wheel and rim assembly type, fastening system and handling equipment required to complete work activity 2.8 Clean wheel and rim assembly, and inspect visually for damage, wear, corrosion, foreign material, cracks and compatibility of components to assess potential health and safety threats according to workplace procedures
3. Remove wheel and rim assembly from vehicle	3.1 Isolate, jack, raise and support vehicle according to workplace procedures, including vertical mounting procedures 3.2 Deflate tyre before removal from vehicle according to workplace procedures 3.3 Verify appropriate deflation of tyre in line with workplace procedures and OEM requirements 3.4 Remove tyre, wheel and rim assembly according to workplace procedures and without causing component damage or injury 3.5 Apply workplace procedures for transport and storage of wheel and rim assembly
4. Inspect mounting surfaces and fasteners	4.1 Visually inspect mounting components, fasteners and surfaces for damage, wear, corrosion, foreign material and cracks according to manufacturer instructions and workplace procedures, and discard damaged fasteners 4.2 Record and report findings according to workplace procedures
5. Fit wheel and rim assembly	5.1 Compare condition of wheel and rim assembly against manufacturer specifications and ensure it is suitable for application, managing non-conformance as per workplace procedures 5.2 Assess cleanliness of mating surfaces, and clean where required 5.3 Fit wheel and rim assembly using handling equipment according

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	to workplace procedures 5.4 Check positioning and alignment of wheel and rim assembly prior to fastening 5.5 Vertically mount wheel and rim assembly in accordance with workplace procedures 5.6 Apply wheel and rim assembly tightening sequence and torque settings according to manufacturer specifications and workplace procedures
6. Inflate tyre	6.1 Identify and apply tyre inflation safety procedures prior to inflating tyre 6.2 Inflate tyre according to workplace procedures and manufacturer recommendations 6.3 Monitor tyre, wheel and rim assembly during inflation according to workplace procedures
7. Complete work processes	7.1 Lower vehicle according to workplace procedures 7.2 Re-check wheel and rim fastener torque settings according to workplace procedures and manufacturer specifications 7.3 Check wheel and rim assembly clearances according to manufacturer specifications 7.4 Perform final inspection to ensure work meets workplace requirements 7.5 Inspect and store tools and equipment according to workplace procedures, tagging or reporting where necessary 7.6 Complete and process workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and not explicit in the performance criteria.

Skills	Description

Reading skills to:	• read and interpret:
	  • written information in workplace procedures, manufacturer instructions, and work health and safety (WHS) requirements relating to removing, inspecting and fitting earthmoving and off-the-road (OTR) wheel and rim assemblies
	  • charts, lists, drawings and other applicable documents.

Writing skills to:	• document inspection findings and recommended repair actions.

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Skills	Description
	• engage with workplace documents.
Oral communication skills to:	• follow oral instructions • ask questions to clarify observations, instructions and procedures • report inspection results • brief team and customers.

Numeracy skills to:	• read and interpret metric and imperial systems of measurement
	• use specialist tools and measuring equipment, including:
	  • gauges
	  • pressure testing tools
	• read and interpret mathematical information, including charts and drawings.

Digital literacy skills to:	• use workplace computerised technology and tools relating to removing and refitting earthmoving and OTR wheel and rim assemblies.
Planning and organising skills to:	• plan and prioritise own work to achieve required outcomes • plan appropriate risk controls to minimise risks before, during and after the tyre fitting process.
Self-management skills to:	• select and use appropriate equipment, materials, processes and procedures • recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• seek information and assistance as required to solve problems • identify tyre condition and performance • match wheel and rim assemblies to tyres and vehicle type.
Teamwork skills to:	• work alongside other team members in a work environment, including those fulfilling other roles, such as riggers, dogmen, mechanics, tyre fitters, drivers and site operators.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Safety requirements must include:	• those prescribed under applicable standards, workplace health and safety regulations, and workplace policies and procedures • isolation procedures • hazard control

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	• manual-handling techniques
	• personal protective clothing and equipment
	• use of tools and equipment
	• working with dangerous or toxic substances:
	  • chemicals
	  • compressed air
	  • nitrogen gas
	  • polyurethane resin (PUR) tyre fill
	  • tyre additive.

Wheel and rim assembly must include:	• demountable type or disk type wheel assemblies • split wheel or multi-piece wheel • tyre and rim assembly • tyre and rim mounted to a hub.
Tools and equipment must include:	• tyre handling equipment. • bead breakers • hand tools • inflation and deflation tools and pressure gauges • jacks • mufflers • pneumatic tools • hydraulic tools • power tools • soft face hammers • support stands • torque tools • tyre levers • wire brushes • inflation pressure gauges.
Hazardous conditions must include:	• changing and unstable ground conditions • dust • hard, soft or uneven ground conditions • line of fire for tyre components • noise • vehicles/pedestrians/machinery/other personnel within the workplace.

Hazardous wheel and rim assembly conditions must include:	• wheel and rim component defects
	• tyre defects
	• other conditions may include:
	  • blocked or damaged valves
	  • cracks
	  • corrosion

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	• cuts and damage • distortion • dislodged components • heat damage • leakage • mechanical damage • structural damage • under- or over-inflated tyre • valve gear • wear.
Mounting components and fasteners must include:	• bolts • cleats • nuts • reducers • spacer bands • studs • washers • wedge or cleat retaining systems.

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURKTJ012 Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies (Release 1)	AURKTJ002 Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies (Release 2)	Updates to elements and performance criteria, range of conditions, performance and knowledge evidence to ensure safety aspects have been included.	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTJ012 Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate removing, inspecting, and refitting industrial earthmoving and off-the-road (OTR) wheel and rim assemblies that safely follows workplace procedures to meet required outcomes on a minimum of three occasions. The candidate must:

- locate and interpret required documentation, policies and procedures
- apply appropriate control measures to mitigate hazardous conditions in work environment and hazardous tyre, wheel and rim assembly conditions
- use raising and supporting equipment to raise vehicle in accordance with workplace procedures
- deflate tyre safely and in accordance with workplace procedures
- remove wheel and rim assembly in accordance with workplace procedures
- inflate tyre safely and in accordance with workplace procedures
- monitor tyre, wheel and rim assembly throughout inflation of tyre
- fit tyre, wheel and rim assembly including using the correct:
  - isolation procedures
  - tightening sequence
  - torque settings
  - inflation process and pressure
  - alignment
- check and confirm the following prior to fastening:
  - component compatibility
  - tyre, wheel and rim component serviceability
  - correct assembly of wheel and rim assembly
- safely lower vehicle
- undertake post-work inspection and complete work processes, including storage of tools and equipment
- transport and store tyre, wheel and rim assembly

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- complete workplace documentation, including:
  - relevant risk assessments
  - tyre, wheel and rim assembly change documentation.

The above work must be performed on tyres fitted to wheel assemblies and rim assemblies of not less than 600 mm (24 inches) nominal diameter. In the course of the work above, the candidate must:

- utilise tyre handing equipment at least once.
- prepare, clean and inspect tyre, wheel and rim assembly for damage and serviceability, recommending repair and replacement actions for each of the following wheel or rim configurations:
  - three piece wheel or rim assembly
  - five piece wheel or rim assembly
  - split wheel or rim assembly
  -

Knowledge Evidence

The candidate must demonstrate the following knowledge:

- Key policies and procedures for removing, inspecting and fitting earthmoving and OTR wheel and rim assemblies, including:
  - how to locate and interpret manufacturers specifications, applicable standards and workplace procedures for removing, inspecting and fitting earthmoving and off-the-road wheel and rim assemblies
  - applicable standards for removing, inspecting and fitting earthmoving and OTR wheel and rim assemblies
  - WHS requirements relevant to removing, inspecting and fitting earthmoving and OTR tyres
  - procedures relating to earthmoving and OTR wheel and rim assemblies:
    - fitting
    - hazard identification and risk control methods, including but not limited to those relating to:
      - hydraulic tooling
      - pneumatic tooling
    - torque measurement when tightening wheel or rim fasteners
    - inflation and deflation of tyres
    - inspection
    - pre-removal inspection
    - post-fitting inspection
  - raising, supporting and lowering procedures for mining and construction vehicles that include soft ground support procedures and systems
  - removal procedures of earthmoving and OTR wheel and rim assemblies:
    - methods for undoing wheel or rim fasteners

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    - handling methods
    - two piece industrial rim
    - disk or demountable multi piece rim
    - one piece wheel and rim

- Earthmoving and OTR vehicle tyres, wheels and rim assembly information including:
  - types and classifications of earthmoving and OTR tyres, wheels and rim assemblies
  - types of mounting systems for earthmoving and OTR wheel and rim assemblies.
  -

Assessment Conditions

The assessment must:

- include access to:
  - a workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to removing, inspecting and fitting earthmoving and OTR wheel and rim assemblies
  - WHS requirements and workplace procedures relevant to removing, inspecting and fitting earthmoving and OTR wheel and rim assemblies
  - manufacturer specifications and procedures or equivalent documentation to remove, inspect and fit earthmoving and OTR wheel and rim assemblies
  - applicable standards relevant to removing, inspecting and fitting earthmoving and OTR wheel and rim assemblies
  - tyre handing equipment, including one of the following:
    - crane
    - earthmoving and OTR tyre handler
    - forklift
    - grab truck
    - integrated tool handler
  - earthmoving and OTR wheel and rim assemblies
  - WHS requirements relevant to removing, inspecting and fitting earthmoving and OTR wheel and rim assemblies
  - tools and equipment appropriate for removing and fitting earthmoving and OTR wheel and rim assemblies
  - tyre, wheel and rim assembly specifications and workplace instructions
  - operational vehicles with earthmoving and OTR wheel and rim assemblies
  - personal protective clothing and equipment required for the activities described in the performance evidence

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- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances.

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.
-

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTJ013 Perform minor repairs to earthmoving and off-the-road tyres

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and perform minor repairs to earthmoving and off-the-road (OTR) tyres. It involves preparing for the task, inspecting and carrying out minor tyre repairs and completing work processes.

It applies to those who fit earthmoving and OTR tyres, wheel and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

Licensing, legislative, regulatory, Australian standards or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Technical - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare for inspection of the tyre	1.1 Obtain and interpret Australian standards for earthmoving and OTR tyres, workplace procedures and safety information 1.2 Identify site and task hazards, assess potential risks, and implement control measures in line with workplace policies 1.3 Complete initial workplace documentation for tyre inspection 1.4 Prepare and clean tyre for inspection

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ELEMENTS	PERFORMANCE CRITERIA
	1.5 Position and secure tyre for inspection
2. Inspect the tyre	2.1 Identify extent and nature of internal and external tyre damage 2.2 Categorise damage in line with Australian standards 2.3 Identify repairable and non-repairable damage 2.4 Assess overall repairability and extent of repairs required
3. Carry out minor repair	3.1 Access and interpret information on appropriate manufacturer instructions and Australian standards 3.2 Identify task hazards and risks and apply risk controls to the equipment to be used 3.3 Carry out minor repair to tyre according to workplace procedures, manufacturer instructions and Australian standards
4. Complete work processes	4.1 Complete workplace documentation relating to tyre repair 4.2 Complete inspection documentation according to Australian standards 4.3 Store tyre according to workplace procedures 4.4 Clear work area and dispose of or recycle waste materials according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• identify information and assistance in manufacturer instructions and Australian standards relating to the inspection and repair of earthmoving and OTR tyres

Reading skills to:	• read and interpret information in:
	  • written Australian standards, workplace procedures and manufacturer instructions
	  • charts, lists, drawings and other applicable documents.

Writing skills to:	• document required repair actions • complete inspection documentation.
Oral communication skills to:	• ask questions to clarify instructions and procedures • report inspection and repair results.
Numeracy skills to:	• read and interpret metric and imperial systems of measurement. • read and interpret mathematical information, including charts and

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Skills	Description

	drawings
	• use specialist tools and measuring equipment, including:
	  • gauges
	  • pressure testing tools.

Digital literacy skills to:	• use workplace computerised technology and tools relating to the inspection and repair of earthmoving and OTR tyres.
Initiative skills to:	• plan and prioritise own work to achieve required outcomes.
Planning and organising skills to:	• select and use appropriate equipment, materials, processes and procedures when inspecting and repairing tyres • recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• seek information and assistance as required to solve problems • identify tyre condition and determine repair requirements.

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURKTJ013 Perform minor repairs to earthmoving and off-the-road tyres (Release 1)	AURKTJ003 Perform minor repairs to earthmoving and off-the-road tyres (Release 3)	Updates to performance evidence and assessment requirements.	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTJ013 Perform minor repairs to earthmoving and off-the-road tyres

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate performance of minor repairs to earthmoving and off-the-road (OTR) tyres that safely follows workplace procedures to meet required outcomes, on a minimum of three occasions. This includes:

- determining control measures required to mitigate site and task hazards
- cleaning, preparing, positioning and securing the tyre for inspection
- inspecting the tyre for internal and external damage, categorise damaging and determining repairability of damage
- safely carry out minor repairs utilising workplace procedures, manufacturer instructions and Australian standards
- completing work processes, including storage of equipment and documentation.

The above work must be performed on wheel assemblies and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures for performing of minor repairs to earthmoving and OTR tyres, including:

- how to locate and interpret manufacturers specifications, Australian standards and workplace procedures for inspecting and repairing earthmoving and OTR tyres
- hazard identification procedures and risk control methods relevant to inspecting and repairing earthmoving and OTR tyres
- inspection procedures for earthmoving and OTR tyres
- procedures for identifying and undertaking minor repairs to earthmoving and OTR tyres
- procedures for reporting damage and repair work on earthmoving and OTR tyres

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Key types of tyre damage, including repairable and non-repairable damage including:

- indicators of tyre damage.
-

Assessment Conditions

The assessment must:

- include access to:
  - a workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to performing minor repairs to earthmoving and OTR tyres
  - WHS requirements and workplace procedures relevant to performing minor repairs to earthmoving and OTR tyres
  - manufacturer specifications and procedures or equivalent documentation for performing minor repairs to earthmoving and OTR tyres
  - Australian standards relevant to performing minor repairs to earthmoving and OTR tyres
  - earthmoving and OTR tyres
  - manufacturer instructions and workplace procedures relevant to performing minor repairs to earthmoving and OTR tyres
  - tools and equipment required for performing minor repairs to earthmoving and OTR tyres
  - workplace location or simulated workplace
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances.

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.
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AURKTJ015 Select earthmoving and off-the-road tyres, wheels and rim assemblies for specific applications

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to select earthmoving and off-the-road (OTR) vehicle tyres, wheels and rim assemblies to suit specific applications. It involves identifying and confirming work requirements, preparing for work, selecting tyres, wheels and rim assemblies and completing work finalisation processes.

It applies to those working on earthmoving and OTR vehicle tyres, wheels and rim assemblies in the mining, construction and other industrial environments.

Licensing, legislative, regulatory, Australian standards or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Technical - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare to select tyres, wheels and rim assemblies	1.1 Identify customer and job requirements from workplace instructions 1.2 Source information required to select tyres, wheels and rim assemblies
2. Determine appropriate	2.1 Access information required to select earthmoving and OTR

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ELEMENTS	PERFORMANCE CRITERIA
tyres, wheels and rim assemblies	tyres, wheels and rim assemblies from manufacturer and component supplier specifications 2.2 Analyse tyre, wheel and rim assembly options to identify technical compliance, economic benefits and operational requirements 2.3 Carry out selection procedures according to workplace instructions and work health and safety (WHS) requirements 2.4 Select product according to customer requirements, manufacture and component supplier specifications
3. Complete selection of tyres, wheels and rim assemblies	3.1 Brief customer on product selection 3.2 Complete required documentation regarding selection according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skills	Description
Learning skills to:	• identify sources of information and assistance in selecting earthmoving and OTR tyres, wheels and rim assemblies.

Reading skills to:	• read and interpret written information in:
	  • job instructions
	  • manufacturer and component supplier specifications
	  • workplace instructions.

Writing skills to:	• complete workplace documentation • document product selection.
Oral communication skills to:	• ask questions to clarify instructions, procedures or customer requirements • brief customer on product selection • follow oral instructions.

Numeracy skills to:	• read and interpret both metric and imperial systems of measurement.
	• interpret numerical information in:
	  • job instructions
	  • manufacturer and component supplier specifications
	  • workplace instructions relating to wheels, rim assemblies, and tyres.

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Skills	Description
Problem-solving skills to:	• seek information and assistance to solve problems.

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURKTJ015 Select earthmoving and off-the-road tyres, wheels and rim assemblies for specific applications (Release 1)	AURKTJ005 Select earthmoving and off-the-road tyres, wheels and rim assemblies for specific applications (Release 1)	Updates to performance evidence and assessment requirements.	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTJ015 Select earthmoving and off-the-road tyres, wheels and rim assemblies for specific applications

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate selection of two different earthmoving and off-the-road (OTR) tyres, wheels and rim assemblies for specific applications that follows workplace procedures to meet required outcomes. This includes:

- accessing and interpreting information required for selecting tyres, wheels and rim assemblies
- selecting a range of earthmoving and OTR vehicle tyres, wheels and rim assemblies appropriate to customer, workplace, manufacturer and component supplier requirements, whilst observing safety procedures and requirements.

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures for selecting earthmoving and OTR tyres, including:

- how to locate and interpret manufacturers specifications, Australian standards and workplace procedures for to earthmoving and OTR vehicle tyres, wheels and rim assemblies
- work health and safety (WHS) requirements relating to selecting earthmoving and OTR vehicle tyres, wheels and rim assemblies

Earthmoving and OTR vehicle tyres, wheels and rim assembly information including:

- tyres, wheels and rim assembly terminology and codes
- tread patterns
- tyre and wheel and rim assembly types and their applications
-

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Assessment Conditions

The assessment must:

- include access to:
  - a workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to selecting earthmoving and OTR tyres, wheels and rim assemblies
  - WHS requirements and workplace procedures relevant to selecting earthmoving and OTR tyres
  - manufacturer specifications and procedures or equivalent documentation to selecting earthmoving and OTR tyres
  - Australian standards relating to earthmoving and OTR vehicle tyres, wheels and rim assemblies
  - earthmoving and OTR vehicles with tyres, wheels and rim assemblies
  - manufacturer and component supplier specifications
  - workplace instructions.
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.
-

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTJ016 Use earthmoving and off-the-road tyre handlers

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to use an earthmoving and off-the-road (OTR) tyre handler. It includes checking the tyre handler and work site for suitability, operating the tyre handler, and completing work according to operational requirements.

It applies to those who fit earthmoving and OTR tyres, wheels and rim assemblies of not less than 600 mm (24 inches) nominal diameter, noting that this may vary based on the occupation of the learner.

Earthmoving and OTR tyre handlers must be operated in compliance with the licence requirements and regulations of the relevant state or territory authority.

Licensing, legislative, regulatory, Australian standards or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Unit Sector

Technical - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Check tyre handler and work site for suitability	1.1 Select work site for operations according to workplace procedures 1.2 Check work area for obstructions and proximity to vehicles and

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ELEMENTS	PERFORMANCE CRITERIA
	equipment 1.3 Erect barriers and warning signs in areas where there may be passing traffic 1.4 Select specialist equipment and tools according to job requirements and workplace procedures 1.5 Inspect tyre handler for serviceability and compliance with relevant Australian standards
2. Operate tyre handling equipment	2.1 Conduct tyre handler pre-operational checks, and identify and address operating hazards 2.2 Operate tyre handler, specialist equipment and tools within safe working limits to maximise efficiency of operations 2.3 Handle tyres, wheels and rim assemblies according to workplace procedures, manufacturer handling recommendations, and Australian standards
3. Complete work processes	3.1 Remove and store barriers and warning signs 3.2 Return tyre handler, and specialist equipment and tools to appropriate storage or parking area 3.3 Complete documentation according to workplace procedures and report any damage or faults

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	• read and interpret written information in Australian standards and workplace procedures relating to the use of earthmoving and OTR tyre handlers.
Writing skills to:	• document actions required during work.
Oral communication skills to:	• report damage or faults • communicate with other personnel in a work context.
Numeracy skills to:	• interpret tyre handler instruments and indicators • read and interpret metric and imperial systems of measurement.
Initiative skills to:	• identify and avoid potential work obstructions and danger to passing traffic.
Planning and organising	• prepare and lay out work area, and obtain equipment and material to avoid wastage, backtracking and workflow interruptions.

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Skills	Description
skills to:	

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURKTJ016 Use earthmoving and off-the-road tyre handlers (Release 1)	AURKTJ006 Use earthmoving and off-the-road tyre handlers (Release 2)	Updates to elements and performance criteria, performance and knowledge evidence. Removal of Range of Conditions.	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTJ016 Use earthmoving and off-the-road tyre handlers

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate using earthmoving and off-the-road tyre handlers that safely follows workplace procedures to meet required outcomes on a minimum of three occasions. The candidate must:

- locate and interpret required documentation, policies and procedures
- select an appropriate work site and determine safety and hazard requirements
- select appropriate equipment and tools for operation determine suitability of tyre handler for work site
- select methods and techniques to operate an earthmoving and OTR tyre handler appropriate to the circumstances, for at least one of the following pieces of equipment:
  - forklift mounted tyre handler
  - truck mounted tyre handler
  - grab truck
- check tyre handler for faults or damage, including at least one of the following:
  - specialist equipment and tool damage
  - tyre, wheel and rim assembly damage
  - tyre handler damage or faults
  - work area damage
- complete work processes, including storage of equipment and completing documentation.

The above work must be performed on tyres fitted to wheel assemblies and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

Knowledge Evidence

The candidate must demonstrate the following knowledge:

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- Key policies and procedures for using earthmoving and OTR tyre handlers, including:
  - how to locate and interpret manufacturers specifications, Australian standards and workplace procedures for earthmoving and OTR tyre handlers
  - duty of care requirements relating to operating an earthmoving and OTR tyre handler
  - handling procedures for earthmoving and OTR tyre handlers
  - earthmoving and OTR tyre handler controls, instruments and indicators and their use
  - operating hazards and procedures to be followed in the event of an operational emergency
  - procedures for pre-operational checks
- Key factors affecting selection of work site, including site layout and obstacles
- Typical damage and faults related to operating earthmoving and off-the-road tyre handlers, including:
  - specialist equipment and tool damage
  - tyre, wheel and rim assembly damage
  - tyre handler damage or faults
  - work area damage.
  -

Assessment Conditions

The assessment must:

- include access to:
  - a workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to removing, inspecting and fitting earthmoving and OTR tyres, wheels and rim assemblies
  - WHS requirements and workplace procedures relevant to removing, inspecting and fitting earthmoving and OTR tyres
  - manufacturer specifications and procedures or equivalent documentation to remove, inspect and fit earthmoving and OTR tyres
  - earthmoving and OTR tyre and wheel and rim assemblies
  - tools and equipment required for the use of an earthmoving and OTR tyre handler
  - earthmoving and OTR tyre handler
  - operational vehicles with earthmoving and OTR tyres, wheel and rim assemblies
  - workplace instructions relating to the use of earthmoving and OTR tyre handlers
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed

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- confirm consistent performance can be applied in a range of relevant workplace circumstances.

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.
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Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTQ001 Diagnose and repair mobile plant final drive assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the final drive assemblies of mobile plant. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The final drive assemblies include those in agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair mobile plant final drive assembly	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose final drive assembly	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures, and environmental and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair final drive assembly	3.1 ***Repair information*** is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked according to manufacturer procedures 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking final drive assembly specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure final drive assembly components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, tolerances and deviations from manufacturer specifications • calculate gear ratios and torque reduction and multiplication.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as micrometers and dial indicator gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for isolating and stabilising machines.
Repair information must include procedures relating	• removing and replacing final drive assemblies • dismantling, repairing, reassembling and adjusting final drive assemblies.

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to:	
Environmental requirements must include:	• procedures for trapping, storing and disposing of oils and fluids released from final drive assemblies.

Unit Mapping Information

Equivalent to AURKTQ3001 Diagnose and repair mobile plant final drive assemblies

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTQ001 Diagnose and repair mobile plant final drive assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair faults in two mobile plant final drive assemblies as follows:
  - one differential carrier assembly
  - one of the following final drive assemblies:
    - double reduction
    - planetary final drive
    - chain drive.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing mobile plant final drive assemblies, including procedures for isolating and stabilising machines
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from final drive assemblies
- operating principles of mobile plant final drive assemblies and their:
  - final drive gears, including:
    - gear types and specific lubrication requirements
    - gear ratios and torque reduction and multiplication
  - differential function
  - chain drives
- application, purpose and operation of mobile plant final drive assemblies and components, including:

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  - differential carrier
  - limited slip, no-spin and differential lock
  - double reduction
  - planetary final drive
  - chain drive
- diagnostic testing procedures for mobile plant final drive assemblies, including:
  - sources of fluid leaks
  - abnormal final drive vibration, noises and operation
  - pre-dismantling inspection procedures
- repair procedures for mobile plant final drive assemblies, including procedures for:
  - dismantling final drive assemblies
  - inspecting final drive assemblies
  - reassembling and adjusting:
    - pinion depth, pinion bearing preload, crown wheel and pinion backlash, side bearing preload, and crown wheel and pinion tooth contact
    - chain drive system
- post-repair testing procedures for mobile plant final drive assemblies.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mobile plant final drive assemblies that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mobile plant final drive assembly specifications

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- two different mobile plant with the final drive assemblies specified in the performance evidence
- diagnostic equipment for mobile plant final drive assemblies
- tools, equipment and materials appropriate for repairing and adjusting mobile plant final drive assemblies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTR001 Diagnose and repair electronic over hydraulic control systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in electronic over hydraulic control systems. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The electronic over hydraulic control systems include those in agricultural machinery, heavy commercial vehicles, marine vessels or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair electronic over hydraulic control system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose electronic over hydraulic control system	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair electronic over hydraulic control system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and prepared 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking electronic over hydraulic system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure electronic over hydraulic system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specification • interpret system hydraulic pressure gauges • interpret electrical test meters.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• operate diagnostic and testing equipment • conduct performance testing of components, systems and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with high pressure fluid hazards
	  • isolating and stabilising machines.

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Unit Mapping Information

Equivalent to AURKTR3001 Diagnose and repair electric-over-hydraulic control systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTR001 Diagnose and repair electronic over hydraulic control systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in electronic over hydraulic control system components as follows:
  - all four of the following:
    - hydraulic proportional control solenoids (flow, pressure and directional)
    - joysticks, potentiometer or touchscreens
    - sensors and feedback devices
    - electronic control amplifier units
  - one of the following:
    - electronic over hydraulic circuitry
    - servo control valves (flow, pressure and directional)
    - electronic control unit (ECU).

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing electronic over hydraulic control systems, including procedures for:
  - working with high pressure fluid hazards
  - isolating and stabilising machines
- operating principles of electronic over hydraulic systems and associated components, including operating principles of flow, pressure and directional control in:
  - electronic open loop circuits

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  - electronic semi open loop circuits
  - electronic closed loop circuits
- application, purpose and operation of electronic over hydraulic control systems and components, including:
  - hydraulic proportional control solenoids
  - servo control units
  - sensors
  - feedback devices
  - electronic control amplifier units
  - joysticks
  - electronic control units
  - electronic over hydraulic circuitry
- diagnostic testing procedures for electronic over hydraulic control systems, including:
  - electronic system analysis while using industry-relevant test equipment
  - component wear analysis
  - system operation analysis
- procedures for inspecting and evaluating the following components:
  - proportional control valves
  - servo control units
  - electronic control units
  - sensors
  - feedback devices
- repair procedures for electronic over hydraulic control systems, including procedures for:
  - testing electronic devices
  - replacing electronic devices and adjusting the following:
    - maximum and minimum flow points
    - dither
    - opening ramps
    - closing ramps
- post-repair testing procedures for electronic over hydraulic control systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electronic over hydraulic control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer electronic over hydraulic control system specifications
- two different electronic over hydraulic control systems with faults as specified in the performance evidence
- diagnostic equipment for electronic over hydraulic control systems
- tools, equipment and materials appropriate for repairing and adjusting mobile plant electronic over hydraulic control systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTX001 Diagnose and repair powershift transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in powershift transmissions. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The powershift transmissions include those in agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
repair powershift transmission	1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose powershift transmission	2.1 Diagnostic tests are carried out according to manufacturer specifications, workplace procedures, and environmental and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair powershift transmission	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked according to manufacturer procedures 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and machinery or transmission is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking powershift transmission specifications and procedures • interpret powershift transmission hydraulic and electrical circuit diagrams.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure powershift transmission components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate ratios, distances, tolerances and deviations from manufacturer specifications • interpret hydraulic pressure gauges and other measuring equipment.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• operate diagnostic and testing equipment • conduct performance testing of components, systems and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for isolating and

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	stabilising machines.
Environmental requirements must include:	• procedures for trapping, storing and disposing of hydraulic fluid released from powershift transmissions.

Unit Mapping Information

Equivalent to AURKTX3001 Diagnose and repair powershift transmissions

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTX001 Diagnose and repair powershift transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in two different vehicles or machines with the following powershift transmissions:
  - multiple countershaft transmission
  - planetary shift transmission
- conduct powershift transmission stall test during above work according to manufacturer specifications and workplace procedures.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing powershift transmissions, including procedures for isolating and stabilising machines
- environmental requirements, including procedures for trapping, storing and disposing of hydraulic fluid released from powershift transmissions
- operating principles of powershift transmissions and associated components, including:
  - torque converters, torque divider torque converters and variable capacity torque converters
  - electronically modulated transmission
  - countershaft transmissions, including:
    - gear types
    - gear ratios and torque reduction and multiplication
    - simple and compound gear trains

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  - compound planetary transmissions, including:
    - gear types
    - gear ratios and torque reduction and multiplication
    - simple and compound planetary gear trains
  - transmission control valves and solenoids
  - hydraulic circuits and schematics
- application, purpose and operation of powershift transmissions and components, including:
  - power flows in:
    - multiple countershaft transmissions
    - compound planetary transmissions
  - torque converters, torque divider torque converters, and variable capacity torque converters
  - hydraulic components and hydraulic control components, including:
    - oil pumps
    - hydraulic valves
    - electronic transmission pressure modulation
    - power train electronic control system
  - mechanical components, including:
    - clutch packs
    - one-way clutches
    - planetary gears
    - compound gear sets
  - powershift electronic control systems
  - transfer cases
  - hydraulic oils and filters
- diagnostic testing procedures for powershift transmissions, including:
  - following safety requirements when stall testing
  - stall testing according to manufacturer specifications and workplace procedures
- dismantling procedures for powershift transmissions, including:
  - measuring clearances and tolerances
  - inspecting components
- repair procedures for powershift transmissions, including procedures for inspecting, evaluating and measuring component wear
- post-repair testing procedures for powershift transmissions, including:
  - stall testing according to manufacturer specifications and workplace procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the powershift transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer powershift transmission specifications
- two different vehicles or machines with powershift transmission faults
- diagnostic equipment for powershift transmissions
- tools, equipment and materials appropriate for repairing and adjusting powershift transmissions.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURKTX002 Analyse and evaluate faults in wheeled mobile plant transmission and driveline systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in wheeled mobile plant transmission and driveline systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The transmission and driveline systems include those of agricultural machinery or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Mobile Plant

Unit Sector

Technical - Transmission

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for wheeled mobile plant transmission or driveline system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Wheeled mobile plant transmission or driveline system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to wheeled mobile plant transmission and driveline systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised diagnostic equipment for wheeled mobile plant transmission and driveline systems.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for tagging out and isolating machines • environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from transmission and driveline systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURKTX5002 Analyse and evaluate wheeled mobile plant transmission system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURKTX002 Analyse and evaluate faults in wheeled mobile plant transmission and driveline systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - transmission system of a wheeled mobile plant machine
  - driveline system of a different wheeled mobile plant machine
  - transmission or driveline system of a third wheeled mobile plant machine.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in wheeled mobile plant transmission and driveline systems, including procedures for tagging out and isolating machines
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from transmission and driveline systems
- principles and processes involved in planning and implementing analysis and evaluation of wheeled mobile plant transmission and driveline system faults
- design and planning of diagnostic procedures of wheeled mobile plant transmission and driveline system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - pneumatic faults
  - electrical faults
- procedures for analysing and evaluating wheeled mobile plant transmission and driveline system faults, including:

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    - system failure analysis
    - component failure analysis
- types, functions, operation and limitations of the following systems:
    - transmission systems, including:
        - mechanical transmissions
        - power shift transmissions
        - automatic transmissions
        - continuously variable transmissions (CVTs)
    - driveline systems, including:
        - drive shafts
        - final drive assemblies
        - differential assemblies
- testing procedures for wheeled mobile plant transmission and driveline systems, including:
    - oil and pneumatic pressures
    - transmission performance
    - stall testing
    - powertrain management
    - driveline vibrations
    - sensor, actuator and wiring harness integrity
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in wheeled mobile plant transmission and driveline systems
- procedures for documenting and reporting the analysis and evaluation process.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the wheeled mobile plant transmission and driveline systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer wheeled mobile plant transmission and driveline specifications
- three different wheeled mobile plant machinery with transmission and driveline system faults
- diagnostic equipment for wheeled mobile plant transmission and driveline systems
- tools, equipment and materials appropriate for analysing and evaluating wheeled mobile plant transmission and driveline systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLLD011 Determine compliance of steering and suspension modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to advise customers on the compliance of steering and suspension modifications with Australian Design Rules (ADRs) for normal road usage. It involves clarifying modifications, determining modification compliance with ADRs, and completing workplace processes and documentation.

This unit applies to those working as an automotive service and repair technician. The steering and suspension systems are those of four-wheel drive (4WD) vehicles, light vehicles and light commercial vehicles. This unit does not apply to agricultural machinery, heavy commercial vehicles, marine vessels, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Regulatory or Legal - Steering and Suspension

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Clarify details of steering and suspension modification	1.1 Discuss and confirm nature of steering and suspension modification with the customer 1.2 Document modification specifications and dimensions 1.3 Identify and document non-standard steering and suspension components

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2. Interpret legality of steering and suspension modification	2.1 Obtain and interpret ADR bulletin applicable to modification to identify the ruling on the legality of intended modification 2.2 Document compliance of intended modification specifications against ADR requirements 2.3 Clarify and discuss interpretation of ruling with customer
3. Recommend a plan of action to achieve ADR requirements	3.1 Develop suitable plan of action to meet ADR requirements 3.2 Clarify and discuss plan with customer 3.3 Complete workplace documentation, including recommendations for modification, according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of ADR information efficiently
Reading skills to:	• read and interpret information from ADR bulletins containing specialised vocabulary • read and interpret information from manufacturer and workplace procedures when seeking steering and suspension system specifications • apply information to intended modification
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting compliance of steering and suspension modifications
Numeracy skills to:	• understand and communicate steering and suspension system numerical information in degrees, and in metric and imperial distances • measure steering and suspension system components • use basic mathematical operations, including addition and subtraction • calculate distances, tolerances and deviations from manufacturer specifications
Oral communication skills to:	• discuss and clarify ADR requirements with the customer
Problem solving skills to:	• develop a suitable plan of action to meet ADR requirements

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURLLD011 Determine compliance of steering and suspension modifications (Release 1)	AURLLD001 Determine compliance of steering and suspension modifications (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Addition of problem solving and communication skills to foundation skills. Addition of assessor requirements.	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLLD011 Determine compliance of steering and suspension modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must determine and document the compliance of two of the following vehicle steering and suspension modifications:

- lowered or raised normal ride heights
- increased track width
- variations between front and rear ride heights
- replacement wheel and tyre assemblies
- replacement steering wheel
- fitted or replacement sway bar, track rod or strut brace
- conversion of vehicle from left-hand drive to right-hand drive
-

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies, workplace procedures and standards for steering and suspension modification including:

- how to locate, read and interpret Australian Design Rules (ADRs) and manufacturer specifications for steering and suspension system modification
- workplace procedures for negotiating and communicating with customers
- workplace procedures for determining compliance of vehicle steering and suspension system modifications against ADR requirements
- procedures for making recommendations and documenting non-compliant modifications

Common types of vehicle steering and suspension modifications, including:

- lowering or raising vehicle ride heights, including setting different front and rear ride heights
- increasing vehicle track width

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- replacing wheel and tyre assemblies
- replacing steering wheels
- fitting or replacing sway bar, track rod or strut braces
- converting vehicle from left-hand drive to right-hand drive
-

Assessment Conditions

The assessment must:

- include access to:
  - an automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions for steering and suspension modification activity
  - workplace procedures for steering and suspension modification activity
  - vehicle manufacturer steering and suspension system specifications
  - vehicle ADRs relevant to steering and suspension system modifications
  - vehicles requiring the steering and suspension system modifications specified in the performance evidence
  - tools, equipment and materials suitable for determining the compliance of steering and suspension modifications
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
  - be conducted in a safe environment
  - be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
  - confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards
-

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTB001 Overhaul light vehicle braking system components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return light vehicle braking system components to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the braking system components, carrying out the overhaul procedures, reassembling and testing the components, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The braking systems include those of light vehicles, light commercial vehicles or outdoor power equipment. This unit does not apply to the braking systems of agricultural machinery, heavy commercial vehicles, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Brakes

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle braking system components	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate braking system components	2.1 Components are dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble components	4.1 Components are assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of components is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and components are presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for braking systems efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking braking system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure braking system components and use basic mathematical

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Skills	Description
	operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers and micrometers • use specialised braking system component overhaul equipment, such as brake disc and drum lathes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • trapping, storing and disposing of brake dust and brake fluids
	  • using specialised braking system component overhaul tools, equipment and machinery
	  • safely using chemicals and toxic substances
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from braking systems.

Unit Mapping Information

Equivalent to AURLTB4001 Overhaul braking system components (light)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTB001 Overhaul light vehicle braking system components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul the following light vehicle braking system components:
  - tandem brake master cylinder
  - vacuum brake booster
  - front and rear brake calipers and disc rotors
  - drum brake wheel cylinders, brake shoes and drums
  - brake line.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling braking system components, including procedures for:
  - trapping, storing and disposing of brake dust and brake fluids
  - using specialised braking system component overhaul tools, equipment and machinery
  - safely using chemicals and toxic substances
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from braking systems
- types, characteristics and operating principles of light vehicle braking systems and associated components
- light vehicle braking system component overhaul procedures, including:
  - methods for cleaning and preparing braking system components for overhaul
  - braking system component dismantling procedures

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- braking system component inspection, measuring and evaluation procedures, including methods for measuring and calculating tolerances and clearances
- braking system component repair and adjustment procedures, including:
  - tandem brake master cylinders
  - vacuum brake boosters
  - front and rear brake calipers
  - disc rotors
  - drum brake wheel cylinders
  - brake shoes and drums
  - brake lines
- component assembly procedures, including procedures for measuring and calculating tolerances, and adjusting components
- post-overhaul testing procedures for light vehicle braking system components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the braking system components that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle braking system component specifications
- light vehicle braking system components specified in the performance evidence and requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting light vehicle braking system components.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTB002 Analyse and evaluate faults in light vehicle braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in light vehicle braking systems in order to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The braking systems include those of light vehicles, light commercial vehicles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Brakes

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for light vehicle braking system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures, and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Braking system and components are prepared for the diagnostic process
3. Carry out analysis and evaluation	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to light vehicle braking systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised light vehicle braking system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with brake friction materials • environmental requirements, including procedures for managing and controlling brake dust and brake fluid released from braking systems.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURLTB5002 Analyse and evaluate light vehicle braking system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTB002 Analyse and evaluate faults in light vehicle braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - hydraulic braking system of a light vehicle
  - mechanical braking system of a different light vehicle
  - electronic braking system of a third light vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in light vehicle braking systems, including procedures for working with brake friction materials
- environmental requirements, including procedures for managing and controlling brake dust and brake fluid released from braking systems
- principles and processes involved in planning and implementing analysis and evaluation of light vehicle braking system faults
- design and planning of diagnostic procedures of light vehicle braking system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - electrical faults
- procedures for analysing and evaluating light vehicle braking system faults, including:
  - system failure analysis
  - component failure analysis

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- types, functions, operation and limitations of the following systems, including:
  - disc and drum assemblies
  - parking brake
  - hydraulic components, including:
    - master cylinder
    - braking system valves and switches
  - electronic systems, including:
    - anti-lock braking systems (ABS)
    - electronic braking systems (EBS)
- testing procedures for light vehicle braking systems, including:
  - disc and drum assemblies
  - parking brakes
  - hydraulic components
  - electronic components
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in light vehicle braking systems
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to light vehicle braking systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle braking system specifications

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- three different light vehicles with faults in the braking systems specified in the performance evidence
- diagnostic equipment for light vehicle braking systems
- tools, equipment and materials appropriate for analysing and evaluating light vehicle braking systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTB003 Diagnose and repair light vehicle hydraulic braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the hydraulic braking systems of light vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The hydraulic braking systems include those in light vehicles, light commercial vehicles or outdoor power equipment. This unit does not apply to agricultural machinery, heavy commercial vehicles, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Brakes

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair light vehicle hydraulic braking system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose braking system	2.1 Diagnostic tests are performed according to workplace procedures and ***safety and environmental requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Repair braking system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, safety and environmental requirements, and without causing damage to components or system 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of hydraulic braking system information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking hydraulic braking system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure braking system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use hydraulic braking system measuring equipment, such as vernier calipers, micrometers and brake drum micrometers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting and supporting light vehicles
	  • handling and controlling brake dust and brake fluids
	• environmental requirements, including procedures for trapping, storing and disposing of brake dust and brake fluid released from hydraulic braking systems.

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Unit Mapping Information

Equivalent to AURLTB3003 Diagnose and repair light vehicle hydraulic braking systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTB003 Diagnose and repair light vehicle hydraulic braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in:
  - two different light vehicle four-wheel disc hydraulic braking systems, in which the work must involve removing and refitting or replacing the brake calipers, disc pads and disc rotors
  - one light vehicle drum braking system, in which the work must involve removing and refitting or replacing brake drums, brake shoes and wheel cylinders
  - one light vehicle brake master cylinder, in which the work must involve removing and refitting or replacing the brake master cylinder.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing light vehicle hydraulic braking systems, including procedures for:
  - lifting and supporting light vehicles
  - handling and controlling brake dust and brake fluids
- environmental requirements, including procedures for trapping, storing and disposing of brake dust and brake fluid released from hydraulic braking systems
- operating principles of light vehicle hydraulic braking systems and associated components, including:
  - levers
  - friction

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    - hydraulics, including the relationship between force, pressure and area
- properties of brake fluids, including:
    - Department of Transportation (DOT) classification
    - synthetic and non-synthetic
    - compatibility of fluid types
- application, purpose and operation of light vehicle hydraulic braking systems and components, including:
    - front and rear split systems
    - diagonal split systems
    - master cylinders, including:
        - tandem master cylinders
        - compensating-type master cylinders
        - centre-valve master cylinders
    - drum braking system and components, including:
        - self-energising or servo effect
        - leading and trailing shoe braking systems
        - duo-servo braking systems
        - two-leading shoe braking systems
        - wheel cylinders
        - manual and self-adjustment systems of drum braking systems
    - disc braking systems and components, including:
        - types of brake discs
        - disc pads
        - self-adjustment of disc pads
        - fixed, floating and dual-piston brake calipers
    - parking brake systems and components, including:
        - parking brake levers
        - drum parking brakes
        - disc parking brakes
        - electronic parking brake systems
    - braking system valves and switches, including:
        - pressure differential valves and switches
        - proportioning valves
        - load-sensing proportioning valves
        - drum brake check valves
    - fluid-level warning devices
    - vacuum operated brake boosting systems
- diagnostic testing procedures for light vehicle hydraulic braking systems, including procedures for:
    - checking brake pedal

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  - operational tests of brake booster
  - operational tests of master cylinder
  - testing brake fluid
  - operational tests of hand brake
  - operational tests of drum and disc brakes
  - measuring and evaluating brake drums, shoes, discs and pads
- repair procedures for light vehicle hydraulic braking systems, including procedures for:
  - removing, replacing and adjusting hydraulic system components, including master cylinder, proportioning valves, switches, brake hoses and lines, disc calipers and wheel cylinders
  - removing, replacing and adjusting braking system components, including brake booster, master cylinder, hand brake lever and cables, brake shoes and drums, brake pads and brake discs
  - bleeding brakes, including anti-lock braking systems (ABS)
- post-repair testing procedures for light vehicle hydraulic braking systems, including procedures for road testing and bedding in brakes.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle hydraulic braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer braking system specifications
- two different light vehicles with four-wheel hydraulic disc brake systems with faults
- one light vehicle with a rear drum brake system
- diagnostic equipment for light vehicle hydraulic braking systems

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- tools, equipment and materials appropriate for repairing light vehicle braking systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTD001 Select and install performance enhanced suspension system products

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to select, install and adjust products to suit a customer's suspension system modification requirements.

It applies to those working in the automotive service and repair industry. The suspension systems are those of four-wheel drive (4WD) vehicles, light vehicles, light commercial vehicles or motor sport vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Steering and Suspension

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify customer	1.1 Purpose of proposed modifications is established and confirmed

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
requirements and assess their practicality and safety compliance	1.2 Practicality of customer requirements is assessed and discussed with appropriate personnel 1.3 Proposed modifications are assessed in relation to safety and Australian Design Rules (ADR) compliance 1.4 Project parameters, including cost and timeframe considerations, are discussed and confirmed 1.5 Vehicle is road tested to ensure proposed modifications are relevant and vehicle condition is appropriate to safely incorporate performance enhanced suspension products 1.6 Written quote is prepared to be authorised by customer according to workplace procedures
2. Prepare for modification	2.1 Required suspension system components are sourced and ordered 2.2 Service information is accessed and interpreted prior to commencing removal procedures 2.3 Hazards associated with the work are identified and risks are managed 2.4 Tools and equipment are selected and checked for serviceability
3. Fit components and make suspension system adjustments	3.1 Original components are removed and stored according to customer requirements, workplace disposal procedures and ***safety requirements*** 3.2 New components are inspected before installation to confirm serviceability 3.3 New components are installed according to manufacturer specifications, workplace procedures and safety requirements 3.4 Fluids and lubricants are added to components according to manufacturer specifications and workplace procedures 3.5 Suspension system adjustments are completed according to manufacturer specifications, workplace procedures and safety requirements
4. Road test vehicle and make final adjustments	4.1 Vehicle is road tested to ensure compliance with project intent 4.2 Suspension system is inspected to confirm it is free of leaks and other malfunctions 4.3 Final adjustments are completed according to manufacturer specifications, workplace procedures and safety requirements
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret safe operating procedures for suspension system testing, dismantling and assembling equipment from signs and workplace and manufacturer literature • interpret information from manufacturer and workshop manuals when seeking suspension system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting findings, making installation recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report findings, and make installation recommendations.
Numeracy skills to:	• understand and communicate suspension system information in degrees and metric and imperial units of measurement • measure suspension system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use measuring equipment, such as tape measures, rulers and vernier calipers.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for managing stored energy in springs and torsion bars.

Unit Mapping Information

Equivalent to AURLTD3001 Select and install performance enhanced suspension system products

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTD001 Select and install performance enhanced suspension system products

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- select and fit performance enhanced suspension systems on two different vehicles, in which the work must involve two of the following:
  - suspension coil springs with modified spring rates
  - modified shock absorbers and struts
  - modified sway bars
  - modified suspension bushes
  - modified torsion bars.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to selecting and installing performance enhanced suspension system products, including procedures for managing stored energy in springs and torsion bars
- operating principles of suspension systems, including:
  - rigid and independent suspensions
  - sprung and unsprung mass
  - ride and curb height
- application, purpose and operation of performance enhanced suspension system products, including:
  - shock absorbers
  - coil springs, torsion bars and leaf springs
  - adjustable coil-overs

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  - rubber and urethane bushings
  - sway bars and sway bar links
  - strut mounts
  - tower bars
- procedures for removing suspension system components
- requirements of Australian Design Rules (ADRs) relating to suspension systems
- procedures for fitting and adjusting performance enhanced suspension system components
- procedures for operating equipment to test suspension systems, including shock absorber testers
- suspension system road testing principles and procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the performance enhanced suspension system products that they have selected and installed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- manufacturer vehicle and suspension product specifications
- ADRs
- two vehicles requiring the installation of performance enhanced suspension system products
- tools, equipment and materials appropriate for selecting and installing performance enhanced suspension system products.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTD002 Service and repair light vehicle lift assisted suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to service, locate and repair faults in hydraulic or pneumatic light vehicle lift assisted suspension systems. It involves preparing for the task, servicing, repairing and post-repair testing the system, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The lift assisted suspension systems include those of light vehicles, four wheel drives or light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to service and repair lift assisted suspension system	1.1 Job requirements are determined from workplace instructions 1.2 Service and repair information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect and service lift assisted suspension system	2.1 System is inspected according to workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications to identify service and repair requirements 2.3 Inspection findings are reported according to workplace procedures 2.4 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 2.5 Post-service testing is carried out according to workplace procedures
3. Repair lift assisted suspension system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and prepared 3.4 System is repaired according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking lift assisted suspension system service and repair procedures and specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings to appropriate personnel.
Numeracy skills to:	• measure and calculate suspension system heights • calculate distance, volume and pressure for servicing and repairing lift assisted suspension systems.
Problem solving skills to:	• determine underlying causes of faults • identify risk factors and take action to minimise risk.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using vehicle lifting and supporting equipment
	  • working with lift assisted suspension systems, including:
	  • hydraulic and pneumatic pressures
	  • hydraulic fluids
	  • stored energy in springs.

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Environmental requirements must include:	• procedures for trapping, storing and disposing of fluids released from suspension systems.

Unit Mapping Information

Equivalent to AURLTD3002 Service and rectify faults in lift assisted suspension systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTD002 Service and repair light vehicle lift assisted suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- service and repair two different lift assisted suspension systems, including one of the following:
  - pneumatic system
  - hydraulic system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to servicing and repairing light vehicle lift assisted suspension systems, including procedures for:
  - using vehicle lifting and supporting equipment
  - working with lift assisted suspension systems, including:
    - hydraulic and pneumatic pressures
    - hydraulic fluids
    - stored energy in springs
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from suspension systems
- operating principles of lift assisted suspension systems, including:
  - hydraulic systems
  - pneumatic systems
- application, purpose and operation of lift assisted suspension system components, including:

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  - hydraulic system, including:
    - hydraulic pump and reservoir
    - switches
    - valves, hoses and connectors
    - gauges
    - hydraulic cylinder
  - pneumatic system, including:
    - compressor
    - switches
    - valves, hoses and connectors
    - gauges
    - airbags
- inspection and servicing procedures for lift assisted suspension systems, including:
  - component wear analysis
  - checking fluid and air leaks
  - checking and adjusting ride and curb height
  - replacing suspension fluids
- repair procedures for lift assisted suspension systems, including removing, repairing and replacing lift assisted suspension components
- post-repair testing procedures for lift assisted suspension systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle lift assisted suspension systems that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace

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- workplace instructions
- manufacturer specifications for light vehicle lift assisted suspension system
- two different light vehicles with lift assisted suspension systems requiring service and repair
- tools, equipment and materials appropriate for inspecting, servicing, repairing and adjusting light vehicle lift assisted suspension systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTD004 Diagnose and repair light vehicle steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the steering systems of light vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The steering systems include those in light vehicles, light commercial vehicles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Steering and Suspension

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
repair light vehicle steering system	1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose steering system	2.1 Diagnostic tests are performed according to workplace procedures and ***safety and environmental requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Repair steering system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or system 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking steering system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• understand steering system information in degrees and metric units of measurement • measure steering system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skill to:	• use measuring equipment, such as tape measures, rulers and vernier calipers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with high pressure and high temperature steering systems • environmental requirements, including procedures for trapping, storing and disposing of power steering hydraulic fluid released from steering systems.

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Unit Mapping Information

Equivalent to AURLTD3004 Repair steering systems (light vehicle)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTD004 Diagnose and repair light vehicle steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in a light vehicle power-assisted rack and pinion steering assembly
- diagnose and repair a fault in a light vehicle power steering pump
- diagnose and repair a fault in one of the following light vehicle steering components:
  - power steering hose
  - tie-rod end.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing light vehicle steering systems, including procedures for working with high pressure and high temperature steering systems
- environmental requirements, including procedures for trapping, storing and disposing of power steering hydraulic fluid released from steering systems
- operating principles of light vehicle steering systems and associated components, including:
  - manual steering systems
  - power steering systems
- application, purpose and operation of the following components of light vehicle steering systems and components, including:
  - steering wheels, including clock springs
  - steering columns

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  - manual steering systems, including:
    - rack and pinion
    - steering boxes
  - hydraulic power steering systems, including:
    - integral piston
    - power assisted rack and pinion
    - electronically controlled power steering systems
  - electric steering systems, including steering angle sensors
- identification, function and basic operating principles of steering angles, including:
  - steering angles:
    - toe-in and toe-out
    - toe-out on turns
    - caster
    - camber
  - Ackermann principle of steering
  - steering axis inclination
- diagnostic testing procedures for light vehicle steering systems, including:
  - operational testing
  - hydraulic steering system testing
  - electronic and load sensing steering testing
  - analysing component wear analysis
- repair procedures for light vehicle steering systems, including procedures for removing, replacing and adjusting the systems
- post-repair testing procedures for light vehicle steering systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle steering systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer steering system specifications
- one light vehicle with faults in its power-assisted rack and pinion steering system
- diagnostic equipment for light vehicle steering systems
- tools, equipment and materials appropriate for diagnosing and repairing light vehicle steering systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTD005 Diagnose and repair light vehicle suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the suspension systems of light vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The suspension systems include those in light vehicles, light commercial vehicles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair light vehicle suspension system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose suspension system	2.1 Diagnostic tests are performed according to workplace procedures and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Repair suspension system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or system 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking suspension system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• understand suspension system information in degrees and metric units of measurement • measure suspension system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use measuring equipment, such as tape measures, rulers and vernier calipers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with stored energy in springs and torsion bars, including when removing tension from suspension components
	  • moving heavy suspension components.

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Unit Mapping Information

Equivalent to AURLTD3005 Repair suspension systems (light vehicle)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTD005 Diagnose and repair light vehicle suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in a light vehicle MacPherson strut suspension system, in which the work must involve removing and refitting or replacing the MacPherson strut
- diagnose and repair a fault in a light vehicle coil spring suspension system, in which the work must involve removing and refitting or replacing the coil spring
- diagnose and repair a fault in one of the following suspension system components, in which the work must involve removing the spring component from the vehicle:
  - leaf spring suspension system
  - torsion bar suspension system
  - pneumatic suspension system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing light vehicle suspension systems, including procedures for:
  - working with stored energy in springs and torsion bars, including when removing tension from suspension components
  - moving heavy suspension components
- operating principles of light vehicle suspension systems and associated components, including:
  - rigid and independent suspensions
  - sprung and unsprung mass

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- ride and curb height
- application, purpose and operation of light vehicle suspension systems and components, including:
  - coil spring suspension, including:
    - types of coil springs and deflection rates
    - front coil spring suspension arrangements, including short arm and long arm suspension
    - rear coil spring suspension arrangements
  - strut or MacPherson suspension
  - leaf spring suspension
  - torsion bar suspension
  - multi-link suspension
  - hydraulic suspension
  - pneumatic suspension
  - suspension system components, including:
    - ball joint function and operation
    - stabiliser bar function and operation
    - Watts link and Panhard rod function and operation
  - independent rear suspension arrangements and operation
  - shock absorber function and operation, including:
    - gas-filled shock absorbers
    - strut or MacPherson shock absorbers
  - hub assemblies and bearing arrangements, including:
    - hubs with tapered roller bearings
    - hubs with unitised bearings
- diagnostic testing procedures for light vehicle suspension systems, including procedures for analysing:
  - component wear
  - abnormal system noise
- repair procedures for light vehicle suspension systems, including procedures for:
  - removing and replacing ball joints, suspension bushes, shock absorbers, MacPherson struts, coil springs, leaf springs and torsion bars
  - compressing coil springs
  - replacing and adjusting bearings for hubs with:
    - tapered roller bearings
    - unitised bearings
- post-repair testing procedures for light vehicle suspension systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer suspension system specifications
- light vehicles with faults in the suspension systems specified in the performance evidence
- diagnostic equipment for light vehicle suspension systems
- tools, equipment and materials appropriate for repairing light vehicle suspension systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTD006 Carry out light vehicle wheel alignment operations

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out light vehicle wheel alignment operations. It involves identifying and confirming work requirements, preparing for the work, carrying out pre-alignment inspection and wheel alignment, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The wheel alignment operations include those with light vehicles or light commercial vehicles. The unit does not apply to agricultural machinery, heavy commercial vehicles, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Carry out wheel alignment pre-checks	1.1 Job requirements are determined from workplace instructions 1.2 Alignment pre-check information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Alignment pre-checks of vehicle wheels, steering and suspension condition are carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 1.5 Faults are identified and reported according to workplace procedures as necessary
2. Carry out vehicle wheel alignment activities	2.1 Vehicle wheel alignment specifications are sourced and interpreted 2.2 Wheel alignment measuring equipment is connected to vehicle according to manufacturer specifications and workplace procedures 2.3 Wheel alignment is carried out without causing damage to components or systems, and readings are recorded 2.4 Corrective adjustments are carried out according to workplace procedures and safety requirements, and within manufacturer specifications 2.5 Wheel alignment is re-checked to confirm accuracy of adjustments 2.6 Post-adjustment wheel alignment readings are recorded and reported according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret safe operating procedures for wheel alignment equipment from workplace signs and procedures and manufacturer specifications • interpret information from manufacturer specifications and workshop literature when seeking vehicle wheel alignment specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting findings, making recommendations and recording vehicle pre-alignment checks and pre- and post-wheel alignment readings.
Numeracy skills to:	• measure steering and suspension system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • understand measurements in metric and imperial units of measurement and angles in degrees.
Planning and organising skills to:	• select and prepare the appropriate tools and equipment to allow the job to be completed without time wastage.
Technology skills to:	• use precision measuring wheel alignment equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for using air jacks.

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Unit Mapping Information

Equivalent to AURLTD3006 Carry out light vehicle wheel alignment operations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTD006 Carry out light vehicle wheel alignment operations

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- align all four wheels of:
  - one front wheel drive vehicle
  - one rear wheel drive vehicle
- above wheel alignment must include adjusting the following steering angles:
  - camber
  - caster
  - steering axis inclination (SAI)
  - toe (toe-in and toe-out)
  - toe-out on turns.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to light vehicle wheel alignment, including procedures for using air jacks
- application, purpose and operating principles of steering geometry and wheel alignment angles, including:
  - Ackermann principle of steering
  - camber
  - caster
  - SAI
  - thrust angle

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  - toe-in and toe-out
  - toe-out on turns
  - included angle
  - point of intersection
  - scrub radius
- vehicle pre-alignment inspection procedures, including:
  - analysing tyre wear
  - determining wheel run-out
  - determining vehicle height
  - checking frame alignment
- types and operation of wheel alignment systems, including:
  - laser aligners
  - visual aligners
  - camera aligners
- relationships between fault symptoms and component defects
- procedures for measuring and adjusting steering angles, including:
  - camber
  - caster
  - steering axis inclination
  - thrust angle
  - toe
  - toe-out on turns
- procedures for carrying out four-wheel alignments
- steering system reset procedures to calibrate on-board system sensors with the steering geometry.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle wheel alignments that they have carried out, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer wheel alignment specifications
- one front wheel drive light vehicle and one rear wheel drive light vehicle requiring the adjustments specified in the performance evidence
- wheel alignment equipment for light vehicles
- tools, equipment and materials appropriate for carrying out wheel alignment operations on light vehicles.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTD007 Analyse and evaluate faults in light vehicle steering and suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in light vehicle steering and suspension systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The steering and suspension systems include those of light vehicles, light commercial vehicles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for light vehicle steering or suspension system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures, and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Steering or suspension system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to light vehicle steering and suspension systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised light vehicle steering and suspension system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with:
	  • stored energy in springs, air springs and torsion bars
	  • high pressure and high temperature steering system fluids
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from steering and suspension systems.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURLTD5007 Analyse and evaluate light vehicle steering and suspension system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTD007 Analyse and evaluate faults in light vehicle steering and suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - steering system of a light vehicle
  - suspension system of a different light vehicle
  - steering system or suspension system of a third light vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in light vehicle steering and suspension systems, including procedures for working with:
  - stored energy in springs, air springs and torsion bars
  - high pressure and high temperature steering system fluids
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from steering and suspension systems
- principles and processes involved in planning and implementing analysis and evaluation of light vehicle steering and suspension system faults
- design and planning of diagnostic procedures of light vehicle steering and suspension system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - electrical faults

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- procedures for analysing and evaluating light vehicle steering and suspension system faults, including:
  - system failure analysis
  - component failure analysis
- types, functions, operation and limitations of the following systems, including:
  - steering system and components:
    - manual steering
    - steering system theory, including steering angles
    - hydraulic power assisted steering
    - electric power assisted steering
    - electrohydraulic assisted steering
  - front suspension system and components, including short and long arm and MacPherson strut
  - rear suspension and components, including rigid axle and independent suspension
- testing procedures for light vehicle steering and suspension systems, including:
  - power steering
  - manual steering
  - electrical controllers
  - hydraulic pressures
  - mechanical components
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in light vehicle steering and suspension systems
- procedures for documenting and reporting the system analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to light vehicle steering and suspension systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle steering and suspension systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle steering and suspension system specifications
- three different light vehicles with steering and suspension system faults
- diagnostic equipment for light vehicle steering and suspension systems
- tools, equipment and materials appropriate for analysing and evaluating light vehicle steering and suspension systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTD013 Carry out advanced light vehicle wheel alignment operations

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to carry out advanced light vehicle wheel alignment operations. It involves assessing any modifications made to a steering system against safety and Australian Design Rule (ADR) compliance, carrying out pre-alignment inspection, performing any necessary adjustments, testing the vehicle and completing workplace processes and documentation.

It applies to those working within the automotive light vehicle service and repair or light vehicle wheel alignment industry. The wheel alignment operations include those of four wheel drive (4WD) vehicles, light vehicles, light commercial vehicles or motorsport vehicles. The unit does not apply to agricultural machinery, heavy commercial vehicles, marine vessels, mobile plant machinery or motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Pre-requisite Unit

This unit of competency may only be undertaken following completion of the below unit or its equivalent:

- AURLTD006 Carry out light vehicle wheel alignment operations
-

Unit Sector

Technical - Steering and Suspension

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the	Performance criteria describe the performance needed to demonstrate

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essential outcomes.	achievement of the element.
1. Assess compliance of the proposed modification	1.1 Establish purpose for resetting vehicle wheel alignment from workplace instructions and confirm with customer 1.2 Assess practicality of modification specifications and discuss with customer 1.3 Assess proposed modification against safety and ADR compliance and adjust if necessary
2. Carry out light vehicle wheel alignment pre-checks	2.1 Test vehicle according to workplace procedures and workplace health and safety requirements to ensure its condition enables light vehicle wheel alignment to be safely conducted 2.2 Obtain and interpret vehicle wheel alignment pre-check information 2.3 Complete vehicle wheel alignment pre-check according to manufacturer and workplace procedures and workplace health and safety requirements 2.4 Identify and report faults according to workplace procedures
3. Adjust light vehicle alignment to achieve required specifications	3.1 Obtain and interpret light vehicle wheel alignment information 3.2 Identify and examine wheel alignment equipment and tools according to manufacturer and workplace procedures 3.3 Connect wheel alignment measuring equipment to vehicle according to manufacturer specifications, workplace procedures and workplace health and safety requirements 3.4 Perform and record wheel alignment measurements according to manufacturer specifications, workplace procedures and workplace health and safety requirements 3.5 Adjust vehicle wheel alignment according to manufacturer specifications, workplace procedures and workplace health and safety requirements 3.6 Perform and record post-adjustment wheel alignment measurements according to manufacturer specifications, workplace procedures and workplace health and safety requirements
4. Complete work processes	4.1 Test vehicle to confirm accuracy of adjustments according to workplace procedures 4.2 Carry out final inspection to ensure work meets workplace expectations and vehicle is ready for use 4.3 Clear work area and dispose of or recycle materials according to workplace procedures 4.4 Complete wheel aligner maintenance, examine and store tools and equipment according to workplace procedures 4.5 Enter alignment adjustment data into customer's vehicle records 4.6 Complete workplace documentation according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of information for light vehicle wheel alignment pre-checks and light vehicle wheel alignment efficiently
Reading skills to:	• read and interpret complex information and ideas from workplace procedures, documentation and Australian Design Rules • read and interpret safe operating procedures for wheel alignment equipment from workplace signs, procedures and manufacturer procedures • interpret information from manufacturer specifications and workshop literature when seeking light vehicle wheel alignment specifications
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting findings, making recommendations and recording vehicle pre-alignment checks, pre- and post-wheel alignment readings
Numeracy skills to:	• measure steering and suspension system components • use basic mathematical operations, including addition, subtraction and understanding of angles in degrees • calculate distances, tolerances and deviations from manufacturer specifications • understand measurements in metric and imperial units of measurement
Digital literacy skills to:	• navigate computer-based wheel alignment software
Technology skills to:	• use precision measuring wheel alignment equipment
Planning and organising skills to:	• plan own work requirements • prioritise actions to achieve required outcomes • ensure tasks are completed within workplace timeframes • select and prepare suitable tools and equipment to allow the job to be completed • identify and prepare the appropriate tools and equipment to allow the job to be completed without time wastage
Problem solving skills to:	• determine job requirements and select suitable tools or equipment • assess practicality of customer specifications • recommend steering system alignment adjustments based on

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	safety and ADR compliance

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURLTD013 Carry out advanced light vehicle wheel alignment operations (Release 1)	AURLTD003 Reset steering system alignment adjustments to customer specifications (Release 1)	Title change to reflect outcomes of the unit. Addition of a pre-requisite. Wording changes to ensure compliance with Standards for Training Packages. Re-wording of performance criteria and elements. Removal of references to OHS requirements. Removal of range of conditions. Addition of technology skills to foundation skills. Addition of assessor requirements.	Not equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTD013 Carry out advanced light vehicle wheel alignment operations

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate advanced light vehicle wheel alignment operations to customer specifications that safely follows workplace procedures to meet required outcomes. This includes:

- measuring, recording and adjusting all of the following angles on all four wheels of two different light vehicles:
  - camber
  - caster
  - steering axis inclination (SAI)
  - toe (toe-in and toe-out)
  - toe-out on turns
  -

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures for carrying out light vehicle wheel alignment operations, including:

- how to locate and interpret manufacturers specifications, Australian Design Rules and workplace procedures for carrying out light vehicle wheel alignment pre-checks and light vehicle wheel alignment operations
- workplace procedures for communicating with customers
- the following workplace health and safety requirements relating to light vehicle wheel alignment:
  - procedures for using air jacks
- environmental requirements for carrying out advanced light vehicle wheel alignment operations

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- steering system reset procedures to calibrate on-board system sensors with the steering geometry
- vehicle wheel alignment pre-check procedures, including:
  - assessing steering system alignment adjustments against safety and Australian Design Rule (ADR) compliance
  - road testing
  - analysing tyre wear
  - determining wheel run-out
  - determining vehicle height
  - checking frame alignment
- measuring and adjusting steering angles procedures, including:
  - caster
  - camber
  - toe-in
  - toe-out on turns
- workplace housekeeping and documentation procedures

Steering geometry and wheel alignment angles, including:

- Ackermann principle of steering
- camber
- caster
- SAI
- thrust angle
- toe-in and toe-out
- toe-out on turns
- included angle
- point of intersection
- scrub radius

Key reasons for making non-standard alignment settings on driving and ride characteristics, including:

- fitting modified road springs
- fitting revised shock absorbers
- fitting modified sway bars
- altering ride height
- fitting non-standard wheel and tyre combinations
- variations to understeer and oversteer
- off-road use

Key types and uses of wheel alignment systems, including:

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- laser aligners
- visual aligners
- camera aligners
-

Assessment Conditions

The assessment must:

- include access to:
  - automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to wheel alignment activity
  - workplace procedures relating to wheel alignment activity
  - manufacturer steering system alignment specifications required to complete wheel alignment activity
  - Australian Design Rules
  - two different vehicles requiring steering system adjustments to the angles specified in the performance evidence
  - tools, equipment and materials required for carrying out advanced light vehicle wheel alignment operations
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards
-

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTE001 Remove and install light vehicle engine assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and install engine assemblies fitted to light vehicles. It involves preparing for the task, removing and installing the engine assembly, performing post-installation testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The engine assemblies include those of light vehicles, motorcycles or light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Engines

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove light	1.1 Job requirements are determined from workplace instructions

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vehicle engine assembly	1.2 Engine removal and installation procedures and information are sourced and interpreted 1.3 Engine removal and installation options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment are selected and checked for serviceability
2. Remove engine assembly	2.1 Engine assembly is removed according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to components or systems 2.2 Engine assembly, components and systems are inspected and faults are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Install engine assembly	3.1 Installation options are analysed and those most appropriate to the circumstances are selected 3.2 Engine assembly is installed according to manufacturer specifications and workplace procedures, and without causing damage to components or systems 3.3 ***Post-installation checks, adjustments and tests*** are carried out according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking engine removal and installation specifications and

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Skills	Description
	procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording parts and material used.
Oral communication skills to:	• clarify workplace instructions and determine job requirements.
Numeracy skills to:	• measure components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • calculate and adjust lubricants and coolant volumes.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using engine lifting devices and supporting equipment
	  • handling oils, fuels and coolant
	• environmental requirements, including procedures for trapping, storing and disposing of oils, fluids, coolants and gases released from engine assemblies.

Post-installation checks, adjustments and tests must include:	• pre-start procedures • operational testing and run-in procedures • engine adjustments and cylinder head bolt re-tensioning as required • throttle adjustments • coolant adjustments • ancillary engine systems.

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Unit Mapping Information

Equivalent to AURLTE2001 Remove and install light vehicle engine assemblies

Links

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Assessment Requirements for AURLTE001 Remove and install light vehicle engine assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and install:
  - one front wheel drive engine assembly with water cooling
  - one rear wheel drive engine assembly with water cooling.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and installing light vehicle engines, including procedures for:
  - using engine lifting devices and supporting equipment
  - handling oils, fuels and coolant
- environmental requirements, including procedures for trapping, storing and disposing of oils, fluids, coolants and gases released from engine assemblies
- licensing requirements relating to removing and installing engines fitted with alternative fuels and energy sources
- methods of disconnecting related systems, including:
  - air conditioning system
  - cooling system
  - electrical systems
  - exhaust system
  - fuel system
  - power steering system
  - transmission systems, including:

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    - automatic transmission
    - manual transmission
- removal procedures for engine assemblies, including item tagging procedures
- installation procedures for engine assemblies
- post-installation testing and adjustment procedures for engine assemblies, including:
    - pre-start procedures
    - operational testing and run-in procedures
    - engine adjustments and cylinder head bolt re-tensioning as required
    - throttle adjustments
    - coolant adjustments
    - ancillary engine systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle engine assemblies that they have removed and installed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle engine assembly specifications
- two different light vehicle engine assemblies as specified in the performance evidence
- tools, equipment and materials appropriate for removing and installing light vehicle engine assemblies, including engine lifting devices and supporting equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTE002 Diagnose and repair light vehicle engines

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the spark ignition engines and compression ignition engines of light vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The engines include those in light vehicles or light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Engines

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair light vehicle engine	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose engine	2.1 Diagnostic tests are performed according to workplace procedures and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Dismantle engine	3.1 Tools, equipment and materials are selected and checked 3.2 Engine is dismantled as required according to workplace procedures, and safety and ***environmental requirements*** 3.3 Engine is cleaned and components arranged for inspection according to workplace procedures, and safety and environmental requirements 3.4 Engine components are measured and compared against manufacturer specifications 3.5 Final repair recommendations are made and reported according to workplace procedures
4. Repair and reassemble engine	4.1 Repair information is sourced and interpreted 4.2 Repair options are analysed and those most appropriate to the circumstances are selected 4.3 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or system 4.4 Engine is reassembled according to manufacturer specifications, workplace procedures and safety requirements 4.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and engine is presented ready for use or stored according to workplace procedures 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking engine specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure engine components and use basic mathematical operations, including addition, subtraction and multiplication, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as micrometers and dial bore gauges.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for lifting and supporting light vehicle engines.
Environmental requirements must include:	• procedures for trapping, storing and disposing of fluids released from engines.

Unit Mapping Information

Equivalent to AURLTE3002 Repair engines and associated engine components (light vehicle)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTE002 Diagnose and repair light vehicle engines

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair the following faults in three different light vehicle engines:
- a fault in an engine cylinder head with an overhead camshaft, in which the work must involve removing the cylinder head from the engine
- a fault in two of the following components, in which the work must involve removing the components from the engine:
  - engine valve timing belt
  - engine valve timing chain
  - engine valve lifters
  - cylinder head valve stem seals
  - camshaft
  - camshaft bearings
  - crankshaft
  - balance shaft or its bearings
  - pistons and connecting rods
  - cylinder block sleeves
  - main bearings and big-end bearings
  - internal oil pump
- dismantle and reassemble one of the above engines.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

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- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing light vehicle engines, including procedures for lifting and supporting light vehicle engines
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from engines
- operating principles of light vehicle engines and associated components, including:
  - combustion, including:
    - air-fuel ratios and combustion cycles
    - direct injection
    - detonation
- engine design, including:
  - swept volume and engine volume
  - compression ratio
  - engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
  - torque and horsepower, including brake horsepower
- application, purpose and operation of the following components of light vehicle engines and components, including:
  - lubrication systems, cylinder blocks, cylinders, pistons, cylinder heads, combustion chambers, inlet and exhaust manifolds, connecting rods, crankshafts, piston rings, gudgeon pins, camshafts, timing gears, vibration dampers and flywheels
- diagnostic testing procedures for light vehicle engines, including:
  - wet and dry compression tests
  - cylinder leakage tests
  - oil pressure tests
  - checking sources of fluid leaks
  - exhaust smoke diagnosis
  - checking abnormal engine noises
- dismantling procedures for light vehicle engines, including procedures for:
  - measuring clearances and tolerances
  - inspecting components
- repair procedures for removing, replacing and adjusting light vehicle engines
- assembly procedures for light vehicle engines, including procedures for removing, replacing and adjusting them
- post-repair testing procedures for light vehicle engines, including:
  - checking oil pressure
  - road testing under load
  - checking for fluid leaks.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- three different light vehicle engines with faults specified in the performance evidence
- diagnostic equipment for light vehicle engines
- tools, equipment and materials appropriate for repairing light vehicle engines.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTE003 Analyse and evaluate faults in light vehicle engine and fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in light vehicle engine and fuel systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The engine and fuel systems may be petrol or diesel and include those of light vehicles or light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Engines

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of analysis and evaluation is determined from workplace instructions 1.2 Specifications for light vehicle engine or fuel system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures, and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Engine or fuel system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to light vehicle engine and fuel systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within

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Skills	Description
skills to:	workplace timeframes.
Technology skills to:	• use specialised light vehicle engine and fuel system diagnostic equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with:
	  • hot engine components and rotating engine components
	  • hazardous substances, including:
	  • diesel fuel
	  • petrol fuel
	  • engine oil and coolants
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from engine and fuel systems.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURLTE5003 Analyse and evaluate light vehicle engine and fuel system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTE003 Analyse and evaluate faults in light vehicle engine and fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - engine system of a light vehicle
  - fuel system of a different light vehicle
  - engine or fuel system of a third light vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in light vehicle engine and fuel systems, including procedures for working with:
  - hot engine components and rotating engine components
  - hazardous substances, including:
    - diesel fuel
    - petrol fuel
    - engine oil and coolants
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from engine and fuel systems
- principles and processes involved in planning and implementing analysis and evaluation of light vehicle engine and fuel system faults
- design and planning of diagnostic procedures of light vehicle engine and fuel system faults, including procedures for diagnosing:
  - hydraulic faults

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  - mechanical faults
  - electrical faults
- procedures for analysing and evaluating light vehicle engine and fuel system faults, including:
  - system failure analysis
  - component failure analysis
- types, functions, operation and limitations of the following engine and fuel systems:
  - petrol engines
  - diesel engines
  - petrol fuel systems
  - diesel fuel systems
- testing procedures for light vehicle engine and fuel systems, including:
  - engine performance under load
  - fuel flow and pressure
  - cooling system performance under load
  - oil pressure
  - exhaust flow
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in light vehicle engine and fuel systems
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to light vehicle engine and fuel systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle engine and fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle engine and fuel system specifications
- three different light vehicles with engine and fuel system faults
- diagnostic equipment for light vehicle engine and fuel systems
- tools, equipment and materials appropriate for analysing and evaluating light vehicle engine and fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTJ002 Remove, inspect, repair and refit light vehicle tyres and tubes

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and refit light vehicle tyres and tubes from wheels. It involves identifying and confirming work requirements, preparing for the work; inspecting, repairing and refitting the tyres and tubes, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The tyres and tubes include those of light vehicles, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Wheels and Tyres

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove, inspect, repair and refit light vehicle tyres and tubes	1.1 Job requirements are determined from workplace instructions 1.2 Tyre and tube removal, inspection, repair and refitting information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Remove and inspect tyres, tubes and wheels	2.1 Tyres and tubes are removed from wheels according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Tyres, tubes and wheels are inspected according to manufacturer specifications and workplace procedures 2.3 Inspection findings and recommendations for necessary repairs are reported according to workplace procedures
3. Repair and refit tyres and tubes	3.1 Repair options are analysed and those most appropriate to the circumstances are selected 3.2 Tyres and tubes are repaired according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Tyre is mounted to wheel according to manufacturer specifications and workplace procedures, and without causing damage to components or systems 3.4 Assembled wheel and tyre are checked for serviceability and correct assembly, and inflated according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and wheel assembly is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer specifications and workshop literature when seeking tyre and tube repair procedures and specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation, making repair recommendations, and recording parts and material used.
Numeracy skills to:	• interpret numerical information when repairing tyres and tubes • understand both metric and imperial units of measurement.
Technology skills to:	• operate tyre changing tools and equipment • operate tyre and tube repair equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • deflating and inflating light vehicle tyres
	  • manual handling light vehicle wheel assemblies
	• environmental requirements, including procedures for trapping and disposing of tyre material produced during repair procedures.

Unit Mapping Information

Equivalent to AURLTJ2002 Remove, inspect, repair and fit tyres and tubes (light)

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTJ002 Remove, inspect, repair and refit light vehicle tyres and tubes

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove, inspect, repair and refit light vehicle tyres to both steel and alloy wheels, including repairs to:
  - two bias ply tyres
  - two tubes
  - two radial ply tyres.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to light vehicle tyres and tubes, including procedures for:
  - deflating and inflating tyres
  - manually handling light vehicle wheel assemblies
- environmental requirements, including procedures for trapping and disposing of tyre material produced during repair procedures
- procedures for removing, inspecting, repairing and refitting tyres and tubes, including:
  - split lock rings
  - one piece wheels
- types and applications of tyres, tubes and wheels, including:
  - radial and bias or diagonal ply tyres
  - tubed and tubeless tyres
  - steel and alloy wheels
  - run flat tyres

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- types, application and operation of tyre changing equipment and tyre and tube repair equipment
- post-fitting procedures and checks of light vehicle tyres and tubes.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle tyres and tubes that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer tyre and tube repair procedures and specifications
- light vehicle tyres, tubes and wheels specified in the performance evidence
- tools, equipment and materials appropriate for removing, inspecting, repairing and refitting light vehicle tyres and tubes, including:
  - tyre and tube repair tools and equipment
  - tyre and tube repair consumables
  - tyre changing tools and equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTJ011 Select light vehicle wheels and tyres

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to select light vehicle tyres and wheels to suit specific applications. It involves identifying and confirming work requirements, preparing for the work, selecting tyres and wheels, and completing workplace processes and documentation.

This unit applies to those working within the automotive service and repair industry. The tyres and wheels include those of light vehicles or trailers that are used on sealed or unsealed surfaces.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical - Wheels and Tyres

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Identify tyre and wheel options	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret tyre and wheel information in order to identify tyre and wheel options required for the job 1.3 Identify hazards and issues associated with the work, assess potential risks and implement control measures from workplace health and safety requirements
2. Select tyres and wheels	2.1 Assess technical compliance and economic benefits of tyre and

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for specific applications	wheel options 2.2 Select tyres and wheels according to manufacturer specifications, workplace procedures, Australian Design Rules, and customer requirements
3. Complete work processes	3.1 Communicate selection to appropriate personnel or customer according to workplace procedures 3.2 Complete and process workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of light vehicle tyres and wheels information efficiently
Reading skills to:	• read and interpret information from manufacturer specifications, ADRs, workplace procedures and documentation when seeking tyre and wheel specifications
Writing skills to:	• legibly and accurately fill out workplace documentation, making recommendations regarding selected tyres and wheels
Numeracy skills to:	• interpret numerical information when selecting tyres and wheels • understand both metric and imperial units of measurement

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURLTJ011 Select light vehicle tyres and wheels (Release 1)	AURLTJ001 Select light vehicle tyres and wheels for specific applications (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Removal of range of conditions. Addition of minor elements to assessment	Equivalent

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		requirements. Addition of assessor requirements.	

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTJ011 Select light vehicle wheels and tyres

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must select light vehicle tyres and wheels for specific applications that safely follows workplace procedures to meet required outcomes. This includes:

- selecting the tyres and wheels of four different light vehicles to suit specific customer requirements, in which the work must involve accessing and interpreting information in manufacturer specifications relating to the selection
-

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures relating to the selection of tyres and wheels including:

- how to locate and apply manufacturer specifications for the following light vehicle wheels and tyres:
  - tubeless and tubed tyres
  - bias ply and radial ply tyres
  - directional tyres
  - steel wheels
  - alloy wheels
- how to locate and apply Australian Design Rules relating to light vehicle tyres and wheels
- how to communicate with customers the selection of tyres and wheels
- workplace procedures and documentation for light vehicle wheels and tyres
- workplace health and safety requirements and procedures relating to light vehicle wheels and tyres
- workplace housekeeping and documentation procedures

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Light vehicle tyres and wheels technical information, including:

- light vehicle tyre fitment guide
- light vehicle tyre and wheel assembly terminology and codes
- light vehicle tread patterns, and tyre and wheel assembly types
- specific tyre applications for varying terrain, soil and weather conditions
-

Assessment Conditions

The assessment must:

- include access to:
  - an automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair order and workplace instructions relating to the selection of light vehicle wheels and tyres
  - workplace procedures relating to the selection of light vehicle wheels and tyres
  - at least one customer requiring advice on tyres and wheels
  - manufacturer specifications and tyre and wheel fitment guide
  - Australian Design Rules relating to light vehicle tyres and wheels
  - four different light vehicles for the selection of tyres and wheels
  - equipment and material appropriate for selecting light vehicle tyres and wheels for specific applications
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies and procedures and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards
-

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTJ013 Remove, inspect and refit light vehicle wheel and tyre assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to remove, inspect and refit light vehicle wheel and tyre assemblies. It involves identifying and confirming work requirements, preparing for the task, removing, inspecting and refitting wheel and tyre assemblies, and completing workplace processes and documentation.

This unit applies to those working within the automotive light vehicle service and repair industry. The wheel and tyre assemblies include those of light vehicles, light commercial vehicles or trailers. The work does not involve removing the tyre from the wheel. This unit does not apply to motorcycle or heavy vehicle wheel assemblies.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical - Wheels and Tyres

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare to remove light vehicle wheel and tyre assembly	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret wheel and tyre assembly removal, inspection and refitting information 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies

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	1.4 Identify tools, equipment and materials required for the job, and examine for serviceability
2. Remove and inspect wheel and tyre assembly	2.1 Remove wheel and tyre assembly according to manufacturer and workplace procedures, workplace health and safety requirements and without causing damage to components or systems 2.2 Inspect condition of wheel and tyre assembly, mounting points and fittings for damage and wear 2.3 Report inspection findings and make recommendations for necessary repairs or replacements and adjustments according to workplace procedures
3. Refit wheel and tyre assembly	3.1 Obtain and interpret refitting information in order to identify refitting options required for the job 3.2 Fit and adjust wheel and tyre assembly according to manufacturer specifications, workplace procedures and workplace health and safety requirements 3.3 Carry out tightening sequence and torque settings according to manufacturer specifications and workplace procedures 3.4 Examine wheel assembly for correct assembly and run-out according to manufacturer specifications and workplace procedures, and rectify any issues identified
4. Complete work processes	4.1 Carry out final inspection to ensure work meets workplace expectations and vehicle is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Examine and store tools and equipment according to workplace procedures 4.4 Complete workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of wheel and tyre assembly information efficiently
Reading skills to:	• read and interpret information from manufacturer specifications, workplace procedures and documentation when seeking wheel and tyre removal, inspection, refitting and adjustment procedures and specifications

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Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making repair recommendations, and recording parts and material used
Oral communication skills to:	• clarify instructions • make repair recommendations

Numeracy skills to:	• interpret numerical information in:
	  • manufacturer and component supplier specifications
	  • tyres and wheels
	  • workplace instructions
	  • tyre inflation gauges
	• understand numerical divisions in metric and imperial units of measurement

Technology skills to:	• operate wheel attachment tools and equipment

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURLTJ013 Remove, inspect and refit light vehicle wheel and tyre assemblies (Release 1)	AURLTJ003 Remove, inspect and refit light vehicle wheel and tyre assemblies (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Removal of OHS requirements. Removal of range of conditions. Changed from ‘repair’ to ‘refit’ in performance criteria. Addition of oral communication skills. Addition of assessor requirements.	Equivalent

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Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTJ013 Remove, inspect and refit light vehicle wheel and tyre assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate removing, inspecting and refitting a light vehicle wheel and tyre assembly that safely follows workplace procedures to meet required outcomes on at least three different light vehicle wheel and tyre assemblies. This includes:

- removing, inspecting and refitting three of the following wheel and tyre assemblies:
  - one steel wheel assembly
  - one alloy wheel assembly
  - one four wheel drive vehicle wheel assembly
  - one split or multi-piece wheel assembly
  -

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures relating to the removal, inspection and refitting of light vehicle wheel and tyre assemblies, including:

- how to locate and identify manufacturer specifications, manufacturer procedures and workplace procedures for removing, inspecting and refitting light vehicle wheel and tyre assemblies
- the following workplace health and safety requirements and procedures relating to removing, inspecting and refitting light vehicle wheel and tyre assemblies:
  - lifting and supporting vehicles
  - using wheel assembly removal tools
  - manually handling wheel assemblies
  - working with high air pressure
  - working with split and multi-piece wheels

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- environmental procedures for removing, inspecting and refitting light vehicle wheel and tyre assemblies
- the following light vehicle wheel and tyre assembly removal, inspection and refitting procedures:
  - pre-removal inspections of wheel assemblies, including split and multi-piece wheels
  - removing, inspecting and refitting light vehicle wheel and tyre assemblies, including wheel nut tensioning procedures
  - post-fitting procedures and checks of light vehicle wheel assemblies, including wheel and tyre assembly run-out
- workplace housekeeping and documentation procedures

Key types and uses of different wheel assemblies, including:

- stamped or pressed steel wheels
- alloy wheels
- wheel studs and nuts
- run flat tyres
-

Assessment Conditions

The assessment must:

- include access to:
  - an automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair order and workplace instructions relating to remove, inspect and refit activity
  - workplace procedures relating to remove, inspect and refit activity
  - manufacturer wheel and tyre specifications
  - three different light vehicles with the wheel and tyre assemblies specified in the performance evidence
  - tools, equipment and materials appropriate for removing, inspecting and refitting light vehicle wheel and tyre assemblies
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

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Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards
-

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTQ003 Analyse and evaluate faults in light vehicle transmission and driveline systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in light vehicle transmission and driveline systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The transmission and driveline systems include those of light vehicles, light commercial vehicles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Driveline and Final Drives

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for light vehicle transmission or driveline system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures, and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Transmission or driveline system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to light vehicle transmission and driveline systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised light vehicle transmission and driveline system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting, supporting and manually handling light vehicle transmission and driveline systems
	  • working with rotating shafts
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmission and driveline systems.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURLTQ5003 Analyse and evaluate light vehicle driveline system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURLTQ003 Analyse and evaluate faults in light vehicle transmission and driveline systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the:
  - transmission system of a light vehicle
  - driveline system of a different light vehicle
  - transmission or driveline system of a third light vehicle.

Knowledge Evidence

- Individuals must be able to demonstrate knowledge of:
- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in light vehicle transmission and driveline systems, including procedures for:
  - lifting, supporting and manually handling light vehicle transmission and driveline systems
  - working with rotating shafts
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmission and driveline systems
- principles and processes involved in planning and implementing analysis and evaluation of light vehicle transmission and final drive system faults
- design and planning of diagnostic procedures of light vehicle transmission and driveline system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - electrical faults

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- procedures for analysing and evaluating light vehicle transmission and driveline system faults, including:
  - system failure analysis
  - component failure analysis
- types, functions, operation and limitations of light vehicle transmission and driveline systems and components, including:
  - clutches
  - manual transmissions
  - automatic transmissions
  - torque converters
  - drive shafts
  - final drives
- types, functions, operation and limitations of four-wheel drive system components, including:
  - transfer cases
  - differentials
  - free wheel hubs
- testing procedures for light vehicle transmission and driveline systems, including:
  - transmission shift quality
  - drive shaft run-out
  - driveline operating angles
  - clutch performance under load
  - transmission fluid quality
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in light vehicle transmission and driveline systems
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to light vehicle transmission and driveline systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light vehicle transmission and driveline systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer light vehicle transmission and driveline system specifications
- three different light vehicles with transmission and driveline system faults
- diagnostic equipment for light vehicle transmission and driveline systems
- tools, equipment and materials appropriate for analysing and evaluating light vehicle transmission and driveline systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTQ012 Diagnose and repair light vehicle drive shafts

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the drive shafts of light vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

This unit applies to those working within the automotive light vehicle service and repair industry. The drive shafts include those in light vehicles or light commercial vehicles. This unit does not apply to agricultural machinery, heavy commercial vehicles, marine vessels, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Diagnose light vehicle drive shaft	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret diagnostic information in order to identify diagnostic options required for the job 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies 1.4 Identify diagnostic tools and equipment required for the job and

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	examine for serviceability 1.5 Perform diagnostic tests according to workplace procedures and workplace health and safety requirements 1.6 Examine diagnostic test results to identify causes of faults, report findings and make recommendations for necessary repairs or adjustments according to workplace procedures
2. Repair and test light vehicle drive shaft	2.1 Obtain and interpret repair information in order to identify repair options required for the job 2.2 Identify repair tools, equipment and materials for the job and examine for serviceability 2.3 Carry out repairs or component replacements and adjustments according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements to confirm fault rectification and repair any issues identified
3. Complete work processes	3.1 Carry out final inspection to ensure work meets workplace expectations and drive shaft or vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Examine and store tools and equipment according to workplace procedures 3.4 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of light vehicle drive shaft information efficiently
Reading skills to:	• read and interpret information from workplace procedures and documentation when seeking drive shaft specifications and procedures
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used
Oral communication skills to:	• clarify instructions • report diagnostic findings • make repair recommendations

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Numeracy skills to:	• measure drive shaft components • use basic mathematical operations, including addition, subtraction and understanding of angles in degrees • calculate distances, angles, tolerances and deviations from manufacturer specifications
Planning and organising skills to:	• plan own work requirements • prioritise actions to achieve required outcomes • ensure tasks are completed within workplace timeframes
Technology skills to:	• use precision measuring equipment, including vernier calipers, micrometers and inclinometers

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURLTQ012 Diagnose and repair light vehicle drive shafts (Release 1)	AURLTQ002 Diagnose and repair light vehicle drive shafts (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Combination of performance elements to create three performance criteria. Removal of references to OHS requirements. Removal of range of conditions. Addition of minor elements to knowledge evidence and assessment conditions. Addition of assessor requirements.	Equivalent

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Assessment Requirements for AURLTQ012 Diagnose and repair light vehicle drive shafts

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate a diagnosis and repair of light vehicle drive shafts that safely follows workplace procedures to meet required outcomes. This includes:

- diagnosis and repair of one rear wheel drive vehicle with drive shaft with universal joints, demonstrating the ability to:
  - remove the drive shaft from the vehicle
  - replace one universal joint
  - refit the drive shaft
- diagnosis and repair of one front wheel drive vehicle with constant velocity joint drive shaft, demonstrating the ability to:
  - remove the drive shaft from the vehicle
  - refit the drive shaft
  -

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures relating to the diagnosis, testing and repair of light vehicle drive shafts, including:

- how to locate and identify manufacturers specifications or equivalent documentation and workplace procedures for the diagnosis and repair of light vehicle drive shafts
- the following workplace health and safety requirements for diagnosis and repair of light vehicle drive shafts:
  - safety procedures for working with hazardous oils
- the following environmental requirements for diagnosis and repair of light vehicle drive shafts:
  - procedures for trapping, storing and disposing of oils released from drive shafts

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- the following diagnostic testing procedures for light vehicle drive shafts:
  - road testing that include drive shaft noise and vibration
- the following repair procedures for light vehicle drive shafts:
  - dismantling drive shafts
  - inspecting drive shafts
  - reassembling and aligning components
- post-repair testing procedures for light vehicle drive shafts
- workplace housekeeping procedures

Light vehicle drive shafts and associated components information, including:

- the operating principles of:
  - torque reaction of rear axle housings
  - torque steer
- the purpose and operation of the following propeller shafts:
  - single and multi-piece shafts
  - universal joints
  - cross and yoke joints
  - double cardan joints
  - lobro joints
  - velocity fluctuation of universal joints
  - shaft alignment
- the purpose and operation of the following constant velocity joints:
  - tripod joints
  -

Assessment Conditions

The assessment must:

- include access to:
  - an automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to diagnose and repair activity
  - workplace procedures relating to diagnose and repair activity
  - manufacturer light vehicle drive shaft specifications and procedures or equivalent documentation to complete diagnose and repair activity
  - light vehicle with front engine and rear wheel drive
  - light vehicle with front wheel drive constant velocity joint drive shaft
  - diagnostic equipment for light vehicle drive shafts

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    - tools, equipment and materials required for repair of light vehicle drive shafts
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- automotive repair workplace or simulated workplace
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards
-

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURLTX013 Diagnose and repair light vehicle clutch systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to diagnose and repair faults in the clutch systems of light vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive light vehicle service and repair industry. Clutch systems include those in light vehicles or light commercial vehicles. This unit does not apply to agricultural machinery, heavy commercial vehicles, marine vessels, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Diagnose a light vehicle clutch system	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret diagnostic information in order to identify diagnostic options required for the job 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies 1.4 Identify diagnostic tools and equipment required for the job and

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	examine for serviceability 1.5 Perform diagnostic tests according to workplace procedures and workplace health and safety requirements 1.6 Examine diagnostic test results to identify causes of faults, report findings and make recommendations for necessary repairs or adjustments according to workplace procedures
2. Repair light vehicle clutch system	2.1 Obtain and interpret repair information in order to identify repair options required for the job 2.2 Identify repair tools, equipment and materials for the job and examine for serviceability 2.3 Carry out repair or replacement and adjustments according to workplace procedures, manufacturer specifications, workplace health and safety and environmental requirements 2.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements to confirm fault rectification and repair any issues identified
3. Complete work processes	3.1 Carry out final inspection to ensure work meets workplace expectations and vehicle is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Examine and store tools and equipment according to workplace procedures 3.4 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of light vehicle clutch systems information efficiently
Reading skills to:	• read and interpret information from workplace procedures and documentation when seeking clutch system specifications and procedures
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used
Oral communication skills to:	• clarify instructions • report diagnostic findings • make repair recommendations

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Numeracy skills to:	• measure clutch system components • use basic mathematical operations, including addition, subtraction and multiplication • calculate distances, areas, tolerances and deviations from manufacturer specifications
Planning and organising skills to:	• plan own work requirements • prioritise actions to achieve required outcomes • ensure tasks are completed within workplace timeframes
Technology skills to:	• use precision measuring equipment, including vernier calipers, micrometers and dial indicators

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURLTX013 Diagnose and repair light vehicle clutch systems (Release 1)	AURLTX003 Diagnose and repair light vehicle clutch systems (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Combination of performance elements to create three performance criteria. Removal of references to OHS requirements. Removal of range of conditions. Addition of dual clutch systems to knowledge evidence. Addition of minor elements to knowledge evidence and assessment conditions. Addition of assessor requirements.	Equivalent

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Links

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Assessment Requirements for AURLTX013 Diagnose and repair light vehicle clutch systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate a diagnosis and repair of light vehicle clutch system that safely follows workplace procedures to meet required outcomes. This includes demonstrating the ability to:

- remove and refit a light vehicle manual transmission
- diagnose and repair of a light vehicle clutch system in which the work must include removing, refitting or replacing the following components:
  - light vehicle flywheel
  - clutch friction disc
  - clutch pressure plate assembly
  - clutch pressure plate release bearing
  -

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures relating to the diagnosis and repair of light vehicle clutch systems including:

- how to locate and interpret manufacturer specifications and workplace procedures for the diagnosis and repair of light vehicle clutch systems
- the following workplace health and safety requirements for diagnosis and repair of light vehicle clutch systems:
  - safety procedures for lifting and supporting light vehicle transmissions
  - safety procedures handling and controlling clutch dust and clutch fluid
- the following environmental requirements for diagnosis and repair of light vehicle clutch systems:
  - procedures for trapping, storing and disposing of brake dust and brake fluid released from clutch systems

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- the following diagnostic testing procedures for light vehicle clutch systems:
  - road testing procedures
- the following repair procedures for light vehicle clutch systems:
  - removing, replacing and adjusting the systems
- post-repair testing procedures for light vehicle clutch systems
- workplace housekeeping and documentation procedures

Key features of light vehicle clutch systems and associated components, including:

- the operating principles of:
  - coefficient of friction
- the purpose and operation of the following light vehicle clutch systems and components:
  - wet and dry single and multi-plate clutch
  - dual mass flywheels
  - dampening systems
  - cable operated clutch
  - hydraulically operated clutch
  - dual clutch systems
  -

Assessment Conditions

The assessment must:

- include access to:
  - an automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to diagnose and repair activity
  - workplace procedures relating to diagnose and repair activity
  - manufacturer light vehicle clutch systems specifications and procedures or equivalent documentation to complete diagnose and repair activity
  - light vehicle with manual transmission and with clutch system faults
  - diagnostic equipment for light vehicle clutch systems
- tools, equipment and materials appropriate for repairing light vehicle clutch systems, including:
  - transmission lifting equipment
  - clutch aligning tool
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment

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- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards
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Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMBA002 Load and unload competition vehicles and support equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to prepare, load and unload competition vehicles and support equipment for transportation. It involves preparing for the task, selecting and packing tools and equipment, fitting transportation devices, components and covers to a competition vehicle, and loading and unloading the tools, equipment and competition vehicle.

It applies to those working in the motor sport industry. The competition vehicles are over 300 kg of unladen weight. This unit does not apply to loading and loading vehicles from car trailers.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Support and Logistics

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare requirements for motor sport event	1.1 ***Job requirements*** are determined from team instructions, category rules and supplementary regulations 1.2 Toolboxes and storage containers are checked for completeness and security to avoid damage during transportation 1.3 Additional or replacement equipment and materials are sourced as required 1.4 Transporter storage area is checked and cleaned as required 1.5 Straps and restraint mechanisms are checked for serviceability
2. Prepare competition vehicle for transportation	2.1 Competition vehicle is cleaned and prepared for transportation according to schedule, and electrical system is deactivated 2.2 Transportation devices, components and covers are fitted 2.3 Tie-down points on vehicle and transporter are identified 2.4 Problems with equipment or vehicle are reported to appropriate persons as required
3. Load and secure competition vehicle and support equipment for transportation	3.1 Vehicle and support equipment are loaded on to transporter according to team procedures and ***safety requirements*** 3.2 Vehicle and support equipment are secured according to team requirements and restraints are checked 3.3 Hazardous material is stored according to safety requirements and team procedures 3.4 Transporter tailgates, ramps, doors and bins are closed and secured according to safety requirements and team procedures
4. Unload vehicle and support equipment	4.1 Competition vehicle and support equipment are released from restraints and unloaded according to safety requirements and team procedures 4.2 Transporter is cleaned and prepared for subsequent use 4.3 ***Safety equipment*** is checked for currency and sufficiency, and restraint mechanisms and holding points are checked for integrity 4.4 Team documentation is completed

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret labels on dangerous goods and hazardous chemicals • interpret loading and unloading sequence • interpret event scheduling and location details on team documentation.
Writing skills to:	• legibly and accurately fill out team documentation and material stock lists.
Oral communication skills to:	• clarify instructions from race engineers, team manager and team members • report progress against schedule to team members.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to count equipment and calculate weight from volumes of substances.
Planning and organising skills to:	• use available space within transporter efficiently.
Problem solving skills to:	• determine methods of loading and unloading disabled or damaged vehicles.
Teamwork skills to:	• work as part of a team to ensure materials are available as needed and time wastage is minimised.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Job requirements must include:	• competition vehicle to be transported • materials, tools and equipment to be loaded.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE), including hearing and eye protection
	  • handling 200 litre fuel drums, compressed gas bottles, and dry ice
	  • working at heights

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	• transporting and storing dangerous goods and hazardous chemicals.
Safety equipment must include:	• fire extinguishers • spill kits • PPE, including hearing protection, gloves and sun protection.

Unit Mapping Information

Equivalent to AURMBA3002 Load and unload a competition vehicle and support equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMBA002 Load and unload competition vehicles and support equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- load and unload two different competition vehicles, each over 300 kg of unladen weight and with different tie-down requirements, in which the work must involve:
  - loading and unloading on two different occasions
  - one load and unload at a sanctioned motor sport event.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to loading and unloading competition vehicles and equipment, including procedures for:
  - selecting and using personal protective equipment (PPE), including hearing and eye protection
  - handling 200 litre fuel drums, compressed gas bottles, and dry ice
  - working at heights
  - transporting and storing dangerous goods and hazardous chemicals
- procedures for transporting, using and storing safety equipment, including fire extinguishers, spill kits, hearing protection, gloves and sun protection
- procedures for preparing vehicle for transportation, including:
  - fitting travel tyres and wheels
  - fitting tie-down points
  - de-fuelling vehicle
  - removing compressed gas containers

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    - additional requirements for transportation by a third party, via road freight, air, rail or sea
- load distribution principles for safely loading a transporter
- loading and unloading techniques, including use of:
    - winches
    - tailgate loaders
    - trolleys and dollies
- procedures for securing vehicles and equipment, including use of:
    - ratchet straps
    - chains and dogs
    - wheel chocks
- procedures for recording material and consumable use.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles and support equipment that they have loaded and unloaded, e.g. load list.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport events, including one sanctioned event
- one vehicle transporter over 4.5 tonne unladen
- two different competition vehicles requiring transport to a motor sport event
- support equipment, tools and materials, including lifting and material handling equipment
- load lists, schedules and team procedures.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMDA002 Assist with officiating duties at motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to act as a trainee official or volunteer at a motor sport event. It involves pre-event preparation, carrying out assigned duties, and reviewing personal performance. It requires basic knowledge of the conduct of the applicable motor sport category and its rules and regulations.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Officiating

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Make pre-event preparations	1.1 Job requirements are determined from event organisation documentation

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.2 Personal requirements are identified and equipment is checked and prepared for safe and operational condition 1.3 ***Conditions*** on the day are checked and prepared for 1.4 Pre-event briefing session is attended, and roles and responsibilities are confirmed
2. Carry out assigned duties	2.1 Designated work practices are confirmed with supervisor 2.2 Instructions for assigned duties are followed and safety hazards and risks are monitored 2.3 Activities are carried out according to event rules and regulations, required code of practice, and organisational safety and emergency procedures 2.4 Own limitations are recognised and advice and help sought as required
3. Review and analyse performance	3.1 Post-event debriefing session is attended as required 3.2 Feedback is sought and analysed on own performance to identify areas for improvement 3.3 Personal plan is developed in consultation with support personnel to improve own officiating performance 3.4 Additional training is undertaken as required to improve performance

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• interpret event documentation, including event rules and regulations, required code of practice, and organisational safety and emergency procedures.
Writing skills to:	• legibly and accurately fill out documentation required by officiating duties.
Oral communication skills to:	• clarify documentation with event organiser • seek advice and feedback on own performance.

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Skills	Description
Teamwork skills to:	• work with others and in a team using cooperative approaches to optimise work practices and contribute to a productive team environment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Conditions must include:	• weather • personal comfort.

Unit Mapping Information

Equivalent to AURMDA2002 Assist with motor sport officiating duties

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMDA002 Assist with officiating duties at motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- act as a trainee official or volunteer at two different motor sport events, including at one sanctioned motor sport event.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to assisting with motor sport officiating duties, including procedures for selecting and using personal protective equipment (PPE) required for event
- key information relating to above motor sport events, including:
  - organisational structures of events, including authority and communication lines
  - rules and regulations of motor sport events
- procedures for officiating at above motor sport events, including:
  - personal preparation
  - selecting and checking resources and equipment required for officiating
- policies and procedures relating to above events and own officiating role, including:
  - ethical requirements
  - emergency response procedures
  - reporting and recording procedures
  - planning processes for event.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having assisted with officiating duties at motor sport events, e.g. team event documentation.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two different motor sport events, including one sanctioned event
- motor sport event officiating documentation, including event organisation documentation, rules and regulations, and safety procedures
- motor sport event officiating equipment, including PPE.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMDA004 Recover vehicles at motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to recover damaged or broken down vehicles in motor sport events in a safe and timely manner and without causing further damage to the vehicle. It involves planning, setting up and recovering vehicles that require retrieval due to accident or mechanical breakdown at a motor sport event, and completing workplace processes and documentation. It includes carrying out pre-operational checks on recovery equipment, and operating the recovery equipment and ancillary equipment.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Officiating

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Assess situation and plan recovery	1.1 Type of vehicle to be towed and critical aspects of vehicle design that could impact on recovery operations are identified 1.2 Personnel, equipment and techniques required to carry out the recovery are identified 1.3 Availability of recovery equipment and personnel to carry out the job is confirmed 1.4 Recovery operation is ***planned*** with consideration for security and safety of persons, vehicles and property
2. Set up and secure the recovery situation	2.1 Recovery situation is ***set up*** and secured according to established recovery operation action plan 2.2 Safety of spectators and other personnel in vicinity of recovery situation is managed according to safety procedures and security requirements 2.3 Recovery equipment is positioned and attachment points on vehicle are identified 2.4 Weight of vehicle being recovered is checked to ensure it is consistent with established guidelines, regulatory requirements, and permissible safe working loads for recovery equipment
3. Recover vehicle	3.1 Vehicle to be recovered is manoeuvred into position using appropriate equipment and according to standard operating procedures and ***safety requirements***, and without causing damage to components or systems 3.2 Recovery equipment is operated according to manufacturer procedures, safe work practices and regulatory requirements 3.3 Recovered vehicle is secured using appropriate winches, ropes and cables according to relevant load restraint regulations and standard operating procedures 3.4 Recovered vehicle is conveyed to designated location and unloaded or unhitched according to standard operating procedures and safety requirements
4. Complete work processes	4.1 Recovery area and its near vicinity are cleared of debris and any spills are cleaned up 4.2 Recovery equipment is checked for operational effectiveness according to standard operating procedures 4.3 Faulty equipment is identified, tagged, isolated and reported according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	• interpret recovery equipment operating procedures.
Writing skills to:	• legibly and accurately fill out recovery equipment log, incident reports and official forms • tag faulty equipment.
Oral communication skills to:	• direct vehicle driver, spectators and event officials during vehicle recovery process • report problems with recovery equipment to team members.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, when determining vehicle loads and load limits.
Problem solving skills to:	• adapt or modify equipment to overcome differing vehicle recovery situations.
Teamwork skills to:	• work as part of a team to ensure vehicle is recovered safely and efficiently.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Planning must include:	• identifying potential hazards at recovery site • identifying potential hazards during recovery operation • managing risks associated with identified hazards.
Set-up must include:	• safety equipment • barriers and warning signs.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
	  • procedures to be followed in the event of an emergency when operating recovery equipment, including using portable fire extinguishers and personal protective equipment (PPE)
	  • potential workplace hazards, risks and emergency situations
	  • principles of risk management.

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Unit Mapping Information

Equivalent to AURMDA3004 Recover a motorsport vehicle

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMDA004 Recover vehicles at motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- recover three different motor sport vehicles during one or more motor sport events.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to recovering motor sport vehicles at events, including:
  - procedures to be followed in the event of an emergency when operating recovery equipment, including using portable fire extinguishers and personal protective equipment (PPE)
  - potential workplace hazards, risks and emergency situations
  - principles of risk management
- motor sport vehicle recovery procedures, including:
  - types and application of safety equipment, barriers and warning signs
  - types and application of towing equipment for motor sport vehicles
  - key features of towing vehicles, including vehicle designs that could impact on recovery
  - preparing vehicle for recovery, including identifying towing equipment attachment points and weight of vehicle
  - methods of cleaning recovery area and its near vicinity
- recovery vehicle operating procedures, including:
  - required pre-operational checks for recovery vehicle and its equipment, and resultant potential action

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  - typical recovery vehicle controls, instruments and indicators
  - recovery vehicle manoeuvring procedures, including with and without a tow or load
- types and application of vehicle log books, incident reports and official forms relating to vehicle recovery operations
- motor sport event communication procedures, including reporting lines in the motor sport environment
- commonwealth, state or territory legislation, regulations, standards and codes of practice relating to recovering vehicles in a motor sport event, including safety and environmental regulations.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motor sport vehicles that they have recovered, e.g. recovery vehicle log.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport events
- personal and motor sport team safety procedures and requirements, including PPE
- three different motor sport vehicles requiring recovery
- motor sport vehicle recovery equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMDA005 Act as a marshal at motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to perform the assigned duties of a marshal at a motor sport event. It involves pre-event preparation, and carrying out general or assigned duties, such as paddock marshal, assembly marshal, grid marshal, pit marshal, communications marshal, course marshal or sector marshal. It requires the ability to observe event conditions and activities in own area of responsibility and correctly apply rules and regulations to ensure safety and compliance.

It applies to those working in the motor sport industry. The unit does not apply to the role of a flag marshal.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Officiating

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Make pre-event preparations	1.1 Event documentation is read and interpreted, including category rules and supplementary regulations 1.2 Personal documentation is checked to ensure it is current and suitable 1.3 Personal protective equipment (PPE) requirements are identified, prepared and checked for safe and operational condition 1.4 ***Conditions*** on the day are prepared for 1.5 Pre-race briefing session is attended and own role and responsibilities are confirmed
2. Prepare allocated post	2.1 Location of allocated post is confirmed and other team members are identified 2.2 Location is assessed for risks, and emergency escape route is planned according to category rules, supplementary regulations and ***safety requirements*** 2.3 Allocated post and required equipment are set up according to category rules and supplementary regulations 2.4 Communication system is checked for operation according to manufacturer procedures, category rules and supplementary regulations
3. Carry out marshalling duties	3.1 Communication is maintained with chief marshal and other official personnel as required and according to category rules and supplementary regulations 3.2 Event conditions are monitored and flags, signals or announcements are responded to according to category rules and supplementary regulations 3.3 Emergency situations are responded to according to category rules and supplementary regulations and within limits of own authority 3.4 Participant reactions to decisions are managed and conflict situations dealt with according to category rules and supplementary regulations 3.5 Incidents and observations from event are recorded for inclusion in the final report according to category rules and supplementary regulations
4. Complete work processes	4.1 Equipment, including communication equipment, is checked, maintained and returned according to category rules and supplementary regulations

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	4.2 Marshalling post is cleaned and secured 4.3 Written final report is prepared for chief marshal according to category rules and supplementary regulations 4.4 Post-meeting debriefing session is attended

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply procedures to different situations and motor sport events.
Reading skills to:	• interpret category rules and supplementary regulations.
Writing skills to:	• document incidents and observations during event according to event procedures.
Oral communication skills to:	• communicate information to other event officials, drivers and the public during the event.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to work with dates, times and simple numbers.
Planning and organising skills to:	• determine functional emergency escape route.
Teamwork skills to:	• work as part of a team to ensure event is run safely and efficiently.
Technology skills to:	• operate communication devices, such as two-way radios.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Conditions must include:	• weather • personal comfort.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • identifying hazards and managing risks.

Unit Mapping Information

Equivalent to AURMDA3005 Act as a marshal in a motorsport event

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMDA005 Act as a marshal at motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- act as a marshal at two different sanctioned motor sport events according to event rules and regulations, in which the work must involve:
  - using communication equipment and hand signals to:
    - direct vehicles, competitors and spectators
    - liaise with officials
  - producing a final report of the event for the chief marshal.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to acting as a marshal at a motor sport event, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - identifying hazards and managing risks
- motor sport events detailed in performance evidence, including:
  - organisational structures of events, including authority and communication lines
  - category rules and supplementary regulations of events
- motor sport officiating, including:
  - responsibilities and tasks of a marshal
  - protocols for communicating with other event officials
  - personal preparation, resources and equipment required for officiating
  - communication techniques, including:

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    - radio protocols and hand signalling
    - types and meaning of motor sport flags and light signals
  - basic conflict management techniques
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice relating to motor sport officiating, including safety and environmental regulations
- organisational policies and procedures relating to acting as a motor sport marshal, including:
  - ethical requirements
  - emergency response procedures
  - reporting and recording procedures
  - planning processes for event.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having acted as a marshal at a motor sport event, e.g. event sign-on sheet.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two different sanctioned motor sport events
- motor sport event officiating documentation, including:
  - rules and regulations
  - safety procedures and event procedures
- motor sport event officiating equipment, including PPE.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMDA006 Communicate using flags and signals at motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to communicate with competitors, officials and other personnel at a motor sport event, using flags and other signalling methods. It involves pre-event preparation and communicating with motor sport event officials using flags and signalling methods according to event rules and regulations. It requires the ability to observe race and track conditions and correctly apply signalling conventions to communicate warnings, alerts and other information.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Officiating

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Make pre-event preparations	1.1 Job requirements are determined from event organisation documentation, including category rules and supplementary regulations 1.2 Personal protective equipment (PPE) requirements are identified and prepared and checked for serviceability 1.3 ***Conditions*** on the day are prepared for 1.4 Pre-event briefing session is attended, and own role and responsibilities confirmed
2. Prepare allocated post	2.1 Location of allocated post is confirmed and other team members are identified 2.2 Location is assessed for risks and emergency escape route is planned according to category rules, supplementary regulations and ***safety requirements*** 2.3 Type of communication to be used is confirmed 2.4 Flag set is checked to ensure it is complete and flags are laid out ready for use, or signal lights are checked for correct operation 2.5 Signal boards and related equipment are checked and prepared for operation 2.6 Hazards associated with the work are identified and risks are managed 2.7 Communication system is checked for operation according to manufacturer procedures, category rules and supplementary regulations
3. Use flags and signals during event	3.1 Communication is maintained with chief marshal and other official personnel as required and according to category rules and supplementary regulations 3.2 Event conditions are monitored and flags and signals responded to and used as required according to category rules and supplementary regulations 3.3 Incidents and observations from event are recorded for inclusion in written report according to category rules and supplementary regulations
4. Complete work processes	4.1 Communication equipment is checked, maintained and returned according to category rules and supplementary regulations 4.2 Marshalling post is cleaned and secured 4.3 Written report is prepared for chief marshal according to category rules and supplementary regulations

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	4.4 Post-meeting debriefing session is attended

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply procedures to different situations and motor sport events.
Reading skills to:	• interpret category rules and supplementary regulations.
Writing skills to:	• document incidents and observations during event according to event procedures.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to work with dates, times and simple numbers.
Planning and organising skills to:	• determine functional emergency escape route.
Teamwork skills to:	• work as part of a team to ensure event is run safely and efficiently.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Conditions must include:	• weather • personal comfort.
Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including: • selecting and using PPE

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	• identifying hazards and managing risk.

Unit Mapping Information

Equivalent to AURMDA3006 Communicate using flags and signals in a motorsport event

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMDA006 Communicate using flags and signals at motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- communicate with others using communication equipment at two different motor sport events, in which the work must involve two of the following:
  - using flags
  - using hand signals
  - using signal boards
  - using signal lights.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to acting as a marshal at a motor sport event, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - identifying hazards and managing risk
- motor sport events detailed in performance evidence, including:
  - organisational structures of events, including authority and communication lines
  - category rules and supplementary regulations of events
  - responsibilities and tasks of a flag marshal
  - protocols for communicating with other officials
- motor sport event communication, including:
  - personal preparation, resources and equipment required for officiating
  - communication techniques, including:

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    - motor sport hand signalling
    - types and meaning of motor sport flags and light signals
    - motor sport flag rules and flagging techniques
    - radio protocols
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice relating to motor sport officiating, including safety and environmental legislation and regulations
- organisational policies and procedures relating to acting as a motor sport flag marshal, including:
    - ethical requirements
    - emergency response procedures
    - reporting and recording procedures
    - planning processes for event.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having acted as a flag marshal at a motor sport event, e.g. event sign-on sheet.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two different motor sport events
- motor sport event officiating documentation, including:
    - rules and regulations
    - safety procedures and event procedures
- motor sport event officiating equipment, including PPE
- motor sport event communication equipment, including:
    - motor sport flags
    - motor sport signal lights.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMKA001 Manage motor sport data

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to configure a data acquisition system, and analyse and present motor sport data. It involves preparing for the task, analysing data requirements, configuring an electronic system, and retrieving, analysing and presenting data in various forms, including charts, graphs, tables, comparisons and reports. The data may be related to weather, circuit, driver or rider characteristics, system capability, and vehicle design specifications.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Information Technology

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm data acquisition requirements	1.1 Team requirements and controlling body rules, category rules and supplementary regulations are used to specify data requirements 1.2 Benchmark specifications for a correctly functioning electronic data acquisition system are accessed and interpreted
2. Configure electronic data acquisition system	2.1 Tools and material to support data acquisition process are selected and prepared 2.2 Component rates, ratios and parameters for input sensors are calculated and entered into system math channels 2.3 Sample rates most suited to particular data logging channel are entered 2.4 System operation is checked according to manufacturer specifications and team requirements
3. Retrieve data	3.1 Data acquisition system start-up procedure is carried out according to manufacturer procedures 3.2 Data acquisition system is operated according to its designed capacity and purpose, manufacturer specifications and ***safety requirements*** 3.3 Retrieved data is verified, where appropriate, using reliable alternative or optional processes according to team requirements 3.4 Data parameter variables and potential for inaccurate results are identified
4. Analyse data	4.1 Sources of collected data are compared for consistency 4.2 Data is analysed using mathematical processes 4.3 Trends and patterns in data are analysed, including non-conforming results outside of predicted outcomes 4.4 Possible reasons for trends and patterns are investigated 4.5 Potential vehicle performance enhancement solutions are identified 4.6 Problems with required data or operation of equipment are reported to appropriate persons
5. Present data	5.1 End users of statistical data and their preferred format are identified 5.2 Data is represented to meet end user needs 5.3 Recommendations are documented and presented with supporting data
6. Complete work processes	6.1 Equipment and support material are cleaned, maintained and prepared ready for further use according to manufacturer

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures and team requirements 6.2 Faults in acquisition systems and components are diagnosed 6.3 Unserviceable equipment and faults are documented and appropriate action is taken according to team procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• adapt procedures to different vehicles.
Reading skills to:	• interpret data acquisition system and data analysis software operating procedures from manufacturer instructions.
Oral communication skills to:	• discuss needs of data end users.
Numeracy skills to:	• use basic mathematical processes, including addition, subtraction, multiplication and division, to calculate component rates, ratios and parameters for input sensors • compare numerical information with expected values • perform basic statistical calculations in data, such as mean and standard deviation.
Digital literacy skills to:	• operate computer-based data acquisition systems and data analysis software to analyse data and represent data in differing formats.
Planning and organising skills to:	• gather data with a minimum of backtracking or workflow interruptions.
Self-management skills to:	• work efficiently with minimal supervision and within workplace timeframes.
Technology skills to:	• connect and disconnect data acquisition system to vehicle without causing damage.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and managing risks.

Unit Mapping Information

Equivalent to AURMKA4001 Manage motorsport data

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMKA001 Manage motor sport data

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- configure data acquisition process for each of the following types of motor sport data on two occasions:
  - vehicle data
  - weather data
  - circuit data
  - driver or rider characteristics
- acquire, analyse and present above acquired data.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to collecting and logging motor sport data, including procedures for identifying hazards and managing risks
- types of motor sport data sources, including vehicle, weather, circuit and driver or rider
- motor sport data acquisition systems, including:
  - types, characteristics, components, uses and limitations of signal devices and sensors
  - methods for determining component rates and ratios
  - configuration, inspection and system checks of data acquisition systems
  - operation of data acquisition systems and inputting of variables
  - data retrieval processes and techniques
- data analysis principles, techniques and methodology, including associated mathematical formulas

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- types of statistical representations of motor sport data, including vehicle, weather, circuit, and driver or rider
- data security and confidentiality procedures
- data acquisition system inspection, maintenance and system check procedures, including data acquisition system fault diagnosis.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having managed motor sport data, e.g. analysis reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport vehicle
- motor sport data acquisition system
- motor sport data analysis software.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMLA001 Apply motor sport rules and regulations when officiating

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to apply the relevant rules and regulations of a motor sport event when acting as an official or volunteer at the event. It requires an understanding of the consequences of not following event rules and regulations. It includes the application of some basic strategies to prevent and/or deal with minor disputes regarding decisions made.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Regulatory or Legal

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Assess motor sport event conditions	1.1 Event documentation is read and interpreted, including category rules and supplementary regulations 1.2 Participant status and criteria for event or competition are assessed 1.3 Environment, facilities and equipment within own area of responsibility are assessed according to ***event rules and regulations*** 1.4 ***Safety requirements*** and other risk management issues within own area of responsibility are assessed prior to event or competition commencing according to event rules and regulations 1.5 Concerns are reported promptly to senior official
2. Observe the conduct of motor sport event or competition	2.1 Area of event or competition within own area of responsibility is observed at all times 2.2 Event or competition compliance within own area of responsibility is assessed against relevant rules and regulations 2.3 Identified problems are responded to without delay, and appropriate safety and risk management actions are taken according to event rules and regulations
3. Interpret and apply rules and regulations	3.1 Rules and regulations of event or competition are followed in the performance of duties and implemented in line with ethical practices 3.2 Rule or regulation appropriate to given situation is determined and interpreted to ensure consistency with competition outcomes 3.3 Directions and requests from stewards and senior officials are complied with according to event rules and regulations
4. Communicate decisions	4.1 Decisions are communicated according to event rules and regulations, and level of competition 4.2 Participant reactions to decisions are managed and conflict situations are dealt with according to event rules and regulations 4.3 Incidents or non-compliant activities are reported to senior officials or stewards according to event rules and regulations

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	**Description**
Learning skills to:	• apply rules and regulations to different situations and motor sport events.
Reading skills to:	• interpret motor sport rules and regulations, including category rules and supplementary regulations.
Oral communication skills to:	• use appropriate language and non-verbal behaviour when managing participant reactions and dealing with conflict situations.
Self-management skills to:	• work efficiently with minimal supervision.
Teamwork skills to:	• work as part of a team to ensure event is run safely and efficiently.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Event rules and regulations must include:	• current edition of the relevant National Competition Rules (NCR) • supplementary regulations for motor sport events or competitions • policies and procedures of Federation Internationale de l'Automobile (FIA) and Federation Internationale Motocycliste (FIM) • Australian Sports Commission Code of Conduct.
Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and managing risks.

Unit Mapping Information

Equivalent to AURMLA2001 Comply with motorsport rules and regulations when officiating

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMLA001 Apply motor sport rules and regulations when officiating

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- officiate at two different motor sport events, in which the work must involve determining and applying decisions regarding rules and regulations.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to acting as an official at a motor sport event, including procedures for identifying hazards and managing risks
- motor sport events in performance evidence, including:
  - organisational structures of events, including authority and communication lines
  - category rules and supplementary regulations of events
- motor sport officiating, including:
  - responsibilities and tasks of officials, and protocols for communicating with other officials
  - processes and procedures relating to appeals and inquiries of officiating decisions
  - basic conflict management techniques
  - personal preparation, resources and equipment required for officiating
- key requirements of motor sport rules and regulations for above events, including:
  - current edition of the relevant National Competition Rules (NCR)
  - supplementary regulations for motor sport events or competitions
  - policies and procedures of Federation Internationale de l'Automobile (FIA) and Federation Internationale Motocycliste (FIM)

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  - Australian Sports Commission Code of Conduct
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice relating to motor sport officiating, including safety and environmental legislation and regulations
- organisational policies and procedures relating to event and officiating role, including:
  - emergency response
  - reporting and recording procedures
  - planning processes for event.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having applied rules and regulations while officiating at a motor sport event or competition, e.g. event sign-on sheet.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two different motor sport events
- motor sport event officiating documentation, rules and regulations, safety procedures and event procedures, including:
- current edition of the relevant National Competition Rules (NCR)
- supplementary regulations for motor sport events or competitions
- FIA and FIM policies and procedures
- Australian Sports Commission Code of Conduct.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMLA002 Monitor motor sport official and volunteer application of rules and regulations

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to ensure that officials, support staff and volunteers at a motor sport event are applying the relevant rules and regulations accurately and consistently. It involves monitoring their interpretation and application of rules and regulations, and applying conflict resolution strategies to prevent or address minor disputes arising as a result of decisions made during motor sport events, including in practice sessions.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Regulatory or Legal

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Provide information on rules and regulations	1.1 Relevant rules and regulations, including workplace-specific policies and procedures, are accurately and clearly explained to personnel 1.2 Current and updated rules and regulations are regularly made readily accessible to staff in a timely manner according to workplace procedures 1.3 Information about application and interpretation of rules and regulations is regularly provided and clearly explained to work group 1.4 Opportunities for staff members to ***discuss*** and clarify rules and regulations are provided
2. Monitor application of rules and regulations	2.1 Ongoing compliance with rules and regulations, and ethical behaviour in the their application, are monitored 2.2 Prompt and appropriate action is taken to address non-compliance or misinterpretation of rules and regulations 2.3 Effectiveness of rules and regulations in maintaining event integrity and ensuring fair outcomes for participants is monitored 2.4 Timely feedback is provided to appropriate personnel on non-compliance according to workplace procedures
3. Adjudicate on disputed decisions	3.1 Nature of protest or dispute is clarified and applicable rules and regulations are identified 3.2 Evidence is heard and evaluated according to applicable rules and regulations 3.3 Decision is made according to applicable rules and regulations 3.4 Participant reactions to decisions are managed using effective communication skills and according to rules and regulations 3.5 Incidents or non-compliant activities are reported to senior officials or stewards according to applicable rules and regulations, and are documented as required.
4. Identify training needs	4.1 Advice on training needs of individuals and work group is provided based on monitoring of team performance 4.2 Coaching and mentoring assistance to team members are provided and arrangements for fulfilling training needs facilitated in consultation with appropriate management and according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• apply compliance decisions to different situations and motor sport events • locate motor sport event rules and regulations for currency.
Reading skills to:	• interpret category rules and supplementary regulations.
Writing skills to:	• legibly and accurately fill out documentation when reporting.
Oral communication skills to:	• clarify, interpret and relay information with other stewards, officials and event personnel • discuss rules and regulations, procedures and non-compliance with team members, motor sport drivers and the public.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Discussion must include one or more of the following:	• application and interpretation of rules and regulations • ramifications of poor decisions • conflict of interest.

Unit Mapping Information

Equivalent to AURMLA3002 Monitor compliance with motorsport rules and regulations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMLA002 Monitor motor sport official and volunteer application of rules and regulations

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- monitor the application of rules and regulations by motor sport officials, support staff or volunteers at two different events and:
  - determine consistency and accuracy of decisions
  - adjudicate disputed decisions on one occasion.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to monitoring motor sport officials' and volunteers' application of rules and regulations, including selecting and using personal protective equipment (PPE) such as hearing protection
- motor sport events, including:
  - organisational structures of events, including authority and communication lines
  - category rules and supplementary regulations
  - processes and procedures relating to appeals and inquiries of officiating decisions
  - procedures for reporting and documenting incidents, complaints and complaints
  - types of ethical and unethical conduct in officiating
  - types, causes and resolution techniques of conflict that typically occurs at motor sport events
- organisational policies and procedures relating to motor sport events, including:
  - safety requirements
  - officiating or volunteering at a motor sport event.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having monitored compliance with motor sport rules and regulations at a motor sport event, e.g. event sign-on sheet.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two different motor sport events
- motor sport event officiating documentation, including rules and regulations, safety procedures and event procedures.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMLA003 Inspect vehicles and equipment at motor sport events for compliance

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect motor sport competition vehicles and safety equipment for compliance with applicable rules and regulations. It involves preparing for the task, confirming driver eligibility for the event, confirming that clothing, competition vehicle and equipment are compliant, and completing workplace processes and documentation. The unit requires sufficient mechanical knowledge and skills to use testing and measuring equipment to check mechanical and safety specifications and to ensure they meet eligibility and safety criteria for the particular event category.

It applies to those working in the motor sport industry as scrutineers at a motor sport event.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor sport

Unit Sector

Regulatory or Legal

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for scrutineering	1.1 Rules and regulations governing vehicle and driver eligibility and safety criteria for the event are interpreted 1.2 Scrutineering bay is checked to ensure availability of required tools and equipment to perform tests and measurements 1.3 Scrutineering documentation is sourced and prepared 1.4 Hazards associated with work are identified and risks are managed according to workplace procedures and ***safety requirements*** 1.5 Concerns are reported to Chief Scrutineer or Clerk of Course according to category rules and supplementary regulations as required 1.6 Pre-race briefing session is attended and own role and responsibilities are confirmed
2. Confirm driver eligibility	2.1 Driver documents are examined to confirm status and eligibility for event according to category rules and supplementary regulations 2.2 Driver clothing and equipment are examined for compliance with safety specifications according to category rules and supplementary regulations
3. Confirm vehicle compliance	3.1 Vehicle is examined to ensure it complies with mechanical and safety specifications for event according to category rules and supplementary regulations 3.2 Compliance report is prepared and non-compliance is documented in scrutineering log book as required 3.3 Defective vehicles, components or parts are impounded as required and according to category rules and supplementary regulations
4. Monitor vehicle compliance	4.1 Vehicles are observed in assembly and starting areas to identify mechanical and safety problems 4.2 Work done on vehicle during pit stops is observed to ensure it complies with relevant rules and regulations 4.3 Vehicle damage is examined after an incident to determine roadworthiness for re-entry into event according to category rules and supplementary regulations 4.4 Vehicle damage reports are prepared and logbook updated as required and according to category rules and supplementary regulations

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
5. Communicate decisions and complete reports	5.1 Chief Scrutineer or Clerk of Course is advised of any breach of compliance according to category rules and supplementary regulations 5.2 Participant reactions to decisions are managed and conflict situations are dealt with according to category rules, supplementary regulations and official's code of conduct 5.3 Inspection reports are checked to ensure they are completed accurately and are then signed 5.4 Scrutineer's report is completed at the end of event

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources on information on rules and regulations efficiently.
Reading skills to:	• interpret rules and regulations governing vehicle and driver eligibility and safety criteria • check inspection reports for completeness.
Writing skills to:	• legibly and accurately fill out vehicle inspection report and final scrutineer report.
Oral communication skills to:	• communicate with other event officials and determine own and others' roles • communicate information to other event officials, drivers and the public during event • discuss inspection findings with drivers and other officials.
Numeracy skills to:	• measure vehicle components and use basic mathematical operations to calculate tolerances and deviations from specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Self-management skills to:	• work efficiently with minimal supervision.

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Skills	Description
Teamwork skills to:	• work as part of a team to ensure event is run safely and efficiently.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • selecting and using personal protective equipment (PPE) • lifting and supporting vehicles • using safety devices, including fire protection, safety cage, roll bars and safety harness • identifying hazards and managing risks associated with controlling public access to scrutineering area.

Unit Mapping Information

Equivalent to AURMLA3003 Inspect motorsport vehicles and equipment for compliance

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMLA003 Inspect vehicles and equipment at motor sport events for compliance

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect two different motor sport vehicles and their equipment at two different events and determine vehicle and driver compliance with eligibility and safety criteria for the particular event category in which they are entered.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to acting as a scrutineer at a motor sport event, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - lifting and supporting vehicles
  - using safety devices, including fire protection, safety cage, roll bars and safety harness
  - identifying hazards and managing risks associated with controlling public access to scrutineering area
- motor sport events in performance evidence, including:
  - code of conduct
  - organisational structures of events, including authority and communication lines
  - category rules and supplementary regulations of events
- types, characteristics and operating principles of vehicle mechanical systems, including brakes, exhaust, steering and driveline
- key characteristics of motor sport scrutineering, including:
  - responsibilities and tasks of a scrutineer
  - protocols for communicating with other officials

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    - scrutineering procedures for motor sport vehicles
    - personal preparation, resources and equipment required for scrutineering
- procedures for examining vehicles and equipment for mechanical and safety compliance, including:
    - safe operation of testing and measuring instruments and equipment
    - types of scrutineering reports and methods of completing the reports, including procedures for reporting non-compliance and incidents
- organisational policies and procedures relating to motor sport scrutineering suitable to the event type, location and organising body, including:
    - ethical requirements
    - emergency response procedures
    - reporting and recording procedures
    - planning processes for events.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having inspected compliance of motor sport drivers, vehicles and equipment with motor sport event rules and regulations, e.g. event sign-on sheet.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two different motor sport events
- motor sport event scrutineering documentation, including rules and regulations, safety procedures and event procedures
- two different motor sport competition vehicles requiring scrutineering
- equipment and materials appropriate for motor sport event scrutineering, including PPE and testing equipment.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMMA005 Manage team pit lane and service area operations at motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to plan, coordinate and oversee the pit lane and service area operations of the technical service crew of a motor sport team. It involves developing and managing pit lane and service area operations and emergency repairs, and coordinating competition vehicle on-track support, persons and team communication during a motor sport event.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor sport

Unit Sector

Management, Leadership and Supervision

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Develop pit lane and service area management plan for event	1.1 Controlling body rules, category rules and supplementary regulations requirements are checked and interpreted 1.2 Required tooling and equipment are identified and checklists developed 1.3 Pit lane and service area layout and competition vehicle on-track support strategies are developed and documented 1.4 Team member responsibilities are determined and communicated 1.5 Task timings are determined, documented and communicated 1.6 Event communication strategy is developed and team members are briefed 1.7 Team work area and equipment security procedures are developed and team members are briefed 1.8 Contingency plan is developed and documented
2. Inspect pit lane and service area operation readiness	2.1 Pit lane and service area layout is implemented 2.2 ***Checks of equipment and tools*** and ***safety and environmental requirements*** are supervised 2.3 Correct positioning of competition vehicle stop and service markings is checked
3. Supervise technical service crew	3.1 ***Team members are briefed*** prior to event, and responsibilities and tasks clarified with them at event site 3.2 Communications equipment is allocated and communication strategy reviewed with team members 3.3 Pit lane and service area operations during event are supervised and work is controlled as required 3.4 Safe work environment and practices are monitored and corrected as required 3.5 Emergency repairs on competition vehicle are supervised and authorisation for vehicle to re-enter event is given 3.6 Checks with team members are made regularly during an event
4. Coordinate competition vehicle on-track support	4.1 Technical advice is provided to driver or rider during event and additional information is sought should clarification be required 4.2 Event-related information and strategy are communicated to driver or rider and other team members during event 4.3 Records of event and team performance are maintained 4.4 Liaison with event officials is conducted
5. Supervise post-event operations	5.1 Team members are supervised to ensure post-event impoundment procedures are followed as per controlling body rules, category

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	rules and supplementary regulations 5.2 Dismantling of pit lane and service area is supervised 5.3 Clean-up of work area is supervised 5.4 Disposal of waste material is supervised to ensure compliance with local requirements, and environmental and safety regulations 5.5 Team and event documentation is completed

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• interpret information from controlling body rules, category rules and supplementary regulations.
Writing skills to:	• produce team event documentation that outlines team member roles and responsibilities, and procedures to follow during event.
Oral communication skills to:	• discuss and clarify pit lane and service area operations with team members and event officials • clearly outline team member responsibilities and procedures prior to event.
Numeracy skills to:	• use formal and informal methods to calculate and estimate task timings for pit lane and service area operations during event • use basic mathematical operations, including addition, subtraction, multiplication and division to calculate volumes of fuel and other consumable quantities required for event.
Planning and organising skills to:	• plan pit lane and service area operations to avoid loss of time and resource wastage • analyse event regulations and develop pit lane and service area layout and event management plan.
Teamwork skills to:	• manage and work collaboratively with team members.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Equipment and tool checks must include checking for:	• serviceability, operation and positioning • compliance with team specifications • compliance with controlling body rules and category rules • compliance with supplementary regulations.
Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and managing risks • environmental requirements, including procedures for trapping, storing and disposing of contaminants and fluids released during pit lane and service area operations.
Team member briefing must include:	• confirming task timings • clarifying requirements of category rules and supplementary regulations • discussing event safety requirements • discussing event environmental requirements, including trapping, storing and disposing of contaminants and fluids released during pit lane and service area operations • security procedures for the event.

Unit Mapping Information

Equivalent to AURMMA5005 Manage team pit lane and service area operations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMMA005 Manage team pit lane and service area operations at motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- develop a pit lane and service area management plan for the technical service crew at one motor sport event
- implement above management plan, ensuring that strategies and procedures are applied that:
  - ensure safe work practices in pit lane and service area to minimise risk of injury to self or others
  - minimise risk of damage to competition vehicle, tooling and equipment and wastage of material
  - minimise service and emergency repair times
  - address potential problems in pit lane and service area operations.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to managing team pit lane and service area operations, including procedures for identifying hazards and managing risks
- environmental requirements, including procedures for trapping, storing and disposing of contaminants and fluids released during pit lane and service area operations
- key requirements of controlling body rules, category rules and supplementary regulations relating to above motor sport event
- procedures for developing pit lane and service area management plans, including:
  - procedures for controlling safe work practices in pit lane and service area
  - typical communication strategies used in pit lane and service area

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    - operational tasks and task timing for pit lane and service area
    - competition vehicle on-track support strategies
    - security procedures for pit lane and service area
    - contingency plans for pit lane and service area
- procedures for ensuring operational readiness of pit lane and service area, including typical layouts, including stop and service marking positions
- procedures and techniques for supervising service crews, including:
    - communication principles
    - group dynamic principles
    - effective supervision techniques
    - scenario and logistics planning
    - critical path analysis
    - operational plan development
- procedures for coordinating competition vehicle on-track support, including:
    - communication methods between drivers and crew
    - types of race and team performance records
    - procedures for liaising with event officials
- procedures for supervising post-event operations, including:
    - dismantling, clean-up and waste disposal procedures
    - completing different types of event documentation.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having managed team pit lane and service area operations at a motor sport event, e.g. event sign-on sheet.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- one motor sport event

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- motor sport team.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMMA006 Develop and implement race strategies for motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to develop race strategies for a motor sport event, communicate strategy plan and contingencies to team members, implement race strategies, and conduct post-event reviews. Work involves consulting closely with team members and planning event strategies for competitive advantage.

For the purpose of this unit, a race is defined as each of the items in a motor sport program, such as a heat, final, test run, time trial or promotional ride, as distinct from a race meeting or event.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor sport

Unit Sector

Management, Leadership and Supervision

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Develop race strategy	1.1 Requirements of controlling body rules, category rules and supplementary regulations for race are checked and interpreted 1.2 Input is sought from team members and compared with available event data, including past performance and points documented 1.3 Team strategies are devised for attaining ***competitive advantage*** 1.4 Team members are briefed on security of information and intellectual property procedures 1.5 Contingency plans are developed and documented
2. Communicate strategy to team members	2.1 Responsibilities within strategy, associated plans and contingencies are identified and confirmed with each team member 2.2 Authority hierarchies and relationships are clearly explained 2.3 Team feedback is sought, evaluated and incorporated into strategy
3. Implement race strategy	3.1 Team roles and responsibilities with race strategy and contingency plans are confirmed with team members prior to event 3.2 Strategy is implemented and requirements clearly communicated to team members during event 3.3 Strategy outcomes are monitored and amended as required during event
4. Conduct post-race review of strategy	4.1 Event debrief is conducted with driver or rider and other team members as soon as practicable following race 4.2 Data is analysed and points are documented 4.3 Technician reports are considered and points are documented 4.4 Event strategies are reviewed with team members and revised for future application

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Reading skills to:	• interpret information from controlling body rules, category rules and supplementary regulations.
Writing skills to:	• produce accurate and legible team event documentation that outlines contingency plans, team member responsibilities, and post-race data documentation.
Oral communication skills to:	• sequence race strategy information in discussions with team members, including drivers, to ensure understanding and facilitate feedback • clearly outline team member responsibilities and event procedures.
Numeracy skills to:	• compare and interpret race data in both numerical and qualitative terms and make adjustments to strategy to build future competitive advantage.
Self-management skills to:	• work autonomously.
Problem solving skills to:	• analyse event regulations and develop a race strategy for driver and team members, and change as required.
Teamwork skills to:	• manage and work collaboratively with team members.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Competitive advantage must include:	• promotional advantage • technical advantage • psychological advantage.

Unit Mapping Information

Equivalent to AURMMA5006 Prepare and implement race strategies

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMMA006 Develop and implement race strategies for motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- develop and implement strategies for two different motor sport races, in which the work must involve:
  - consultation with team members
  - use of problem-solving techniques
  - analysis of event variations.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to developing and implementing race strategies, including selecting and using personal protective equipment (PPE)
- procedures and techniques for developing race strategies, including:
  - problem-solving techniques, including:
    - brainstorming and scenario planning
    - critical path analysis
    - force field analysis
    - Pareto analysis
    - strengths, weaknesses, opportunities and threats (SWOT) analysis
    - decision trees
    - psychological advantage
    - technical advantage
    - promotional advantage

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- procedures for implementing race strategies, including:
  - typical team roles and responsibilities at motor sport race events
  - types and content of contingency plans
- post-race review methods, including:
  - debriefing team members, including drivers, of types of data to be gathered
  - methods for analysing race data.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having developed and implemented race strategies at motor sport events, e.g. documented race strategies.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two different motor sport races or simulated races
- motor sport team.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMMA007 Follow motor sport event and team safety requirements

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to safely operate in a motor sport team. It involves understanding motor sport event and team safety rules and regulations, and identifying risks in the team operating area.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor sport

Unit Sector

Management, Leadership and Supervision

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify safety requirements for event	1.1 Controlling body rules, category rules and supplementary regulations are sourced and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.2 Unsafe situations and potential hazards are identified, reported and documented as required 1.3 Personal safety requirements are identified from team procedures and controlling body rules
2. Follow safety requirements during event	2.1 Controlling body rules, category rules and supplementary regulations are followed 2.2 Personal and motor sport team ***safety procedures and requirements*** are clarified and followed in own work situation 2.3 Dangerous goods and hazardous substances are safely handled and stored according to team procedures 2.4 Team procedures for dealing with incidents, accidents and emergencies are followed as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• source controlling body rules, category rules, and supplementary regulations regarding motor sport event and team safety requirements for individual motor sport events.
Reading skills to:	• interpret team safety procedures and requirements and controlling body rules, category rules and supplementary regulations • interpret labels and signage associated with dangerous goods and hazardous substances.
Writing skills to:	• legibly and accurately fill out documentation relating to unsafe situations and hazards.
Oral communication skills to:	• report unsafe situations and hazards and clarify team safety procedures and requirements.
Problem solving skills to:	• implement team safety requirements, controlling body rules, category rules, and supplementary regulations: • to manage unsafe situations and hazards

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Skills	Description
	• in own work situation.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety procedures and requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements relating to motor sport event and team safety procedures, including procedures for: • selecting and using personal protective equipment (PPE) • following emergency procedures for accidents and injuries • handling and storing dangerous goods and hazardous substances • undertaking preventative measures, including: • maintaining a clean and tidy work area • ensuring tooling and equipment are clean and functional.

Unit Mapping Information

Equivalent to AURMMA3007 Follow motorsport event and team safety requirements

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMMA007 Follow motor sport event and team safety requirements

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- follow motor sport event and team safety requirements at two different motor sport events.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to motor sport event and team safety procedures, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - following emergency procedures for accidents and injuries
  - handling and storing dangerous goods and hazardous chemicals
  - undertaking preventative measures, including:
    - maintaining a clean and tidy work area
    - ensuring tooling and equipment are clean and functional
- key requirements of controlling body rules, category rules and supplementary regulations relating to above motor sport events.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having followed personal and team safety requirements during motor sport events, e.g. event sign-on sheet.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two different motor sport events
- controlling body rules, category rules and supplementary regulations for the motor sport events
- personal and motor sport team safety procedures and requirements, including PPE
- dangerous goods and hazardous chemicals associated with motor sport events.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMSA001 Follow motor sport safety and risk management procedures

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to apply safety and risk management procedures in a motor sport environment, including officiating, supporting and volunteer roles. It requires some judgement and decision making skills.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Health and Safety

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify safety and risk management procedures	1.1 Motor sport event safe work practices are identified 1.2 Appropriate personnel for reporting queries and concerns about

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
of motor sport workplace	safety in the workplace are identified 1.3 Workplace procedures and documentation for identifying, controlling and reporting hazards are identified
2. Follow safety and risk management procedures during motor sport work	2.1 Activities are conducted using safe operating practices according to workplace safety requirements 2.2 Existing and potential hazards in the workplace are identified and reported to appropriate personnel 2.3 Workplace procedures and instructions for controlling hazards are implemented within limits of own authority 2.4 Incidents are reported according to workplace procedures
3. Respond to emergency situations in a motor sport workplace	3.1 Emergency procedures and responsibilities of self and co-workers in the event of an emergency are identified 3.2 Emergency situations are identified and appropriate personnel promptly notified 3.3 Emergency procedures, including evacuation procedures, are followed ***within limits of own authority*** 3.4 Emergency incidents and responses are reported accurately as required and according to workplace procedures and requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• interpret workplace and safety procedures that support safe work practices.
Writing skills to:	• legibly and accurately complete incident and accident reports, and workplace hazard and risk assessment forms.
Oral communication skills to:	• give clear, sequenced information to appropriate personnel when reporting hazards, incidents and workplace emergencies • request backup support or further instructions when personal limitations in an incident or emergency are reached.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Within limits of own authority must include one of the following:	• identifying personal limitations • advising team members of emergency • seeking backup support • requesting further instructions.

Unit Mapping Information

Equivalent to AURMSA2001 Follow motorsport safety and risk management procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMSA001 Follow motor sport safety and risk management procedures

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- work safely throughout one entire motor sport event, in which the work must involve:
  - carrying out a hazard inspection at the event
  - identifying, controlling and reporting a hazard identified at the event
  - identifying fire safety equipment at the event and its correct application
  - identifying emergency evacuation procedures and responsibilities of self and co-workers at the event.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- basic aspects of relevant state or territory safety legislation, including:
  - employer responsibilities for safety of motor sport personnel
  - employee responsibilities for participating in work health and safety (WHS) practices and procedures
  - employee responsibility to ensure the safety of self and others in the motor sport workplace
- common motor sport workplace hazards, risks and emergency situations
- basic principles and procedures for identifying and controlling hazards and assessing risk
- procedures for reporting hazards
- WHS symbols and signs
- common types and uses of personal protective equipment (PPE)
- common types and application of fire extinguishers
- emergency response procedures.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having followed safety and risk management procedures in a motor sport workplace, e.g. risk assessment sheet.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport event or workplace
- fire safety equipment required for the motor sport environment
- workplace information on WHS policies and procedures
- PPE specific to the event.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMSA002 Implement and monitor safety and risk management in a motor sport environment

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to implement predetermined policies and procedures to ensure the health and safety of team officials, contractors and volunteers at a motor sport event, including a practice session. It involves promoting and monitoring health and safety practices and managing risks as part of a supervisory function.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Health and Safety

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Implement health and	1.1 Relevant safety information is accurately and clearly explained to

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
safety practices and procedures	personnel, including workplace-specific policies and procedures 1.2 Current and updated safety information is made readily accessible to staff in a timely and regular manner according to workplace procedures 1.3 Information about identifying hazards and controlling risks is provided regularly and clearly explained to the work group 1.4 Opportunities for staff members to contribute their views on current and future safety practices are provided, including views on how to eliminate or control risks
2. Monitor safe work practices	2.1 Ongoing compliance with safe work practices and vigilance on the job are monitored 2.2 Prompt and appropriate action is taken to address non-compliance with procedures, safe work practices and non-attention to event conditions 2.3 Effectiveness of work practices in maintaining safety of personnel and managing risks through close attention to event operations and conditions is monitored 2.4 Timely feedback is provided on safety management practices to appropriate personnel according to workplace procedures
3. Provide advice on risk control	3.1 Advice on hazards in work area is provided to personnel according to workplace safety procedures 3.2 Procedures to control risks using the hierarchy of controls are implemented according to workplace procedures 3.3 Effectiveness of control measures is monitored, and inadequacies promptly identified and resolved or reported to appropriate personnel 3.4 Incidents and responses are reported accurately according to workplace procedures and legislative requirements
4. Identify training needs	4.1 Advice on safety training needs of individuals and work group is provided based on monitoring of team performance 4.2 Coaching and mentoring assistance to team members are provided and arrangements for fulfilling training needs facilitated in consultation with appropriate management and according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• apply procedures to different situations, motor sport events and workplaces.
Reading skills to:	• interpret work health and safety (WHS) information from relevant legislation.
Writing skills to:	• inform staff about changes in WHS information • record and report workplace incidents and the responses taken.
Oral communication skills to:	• discuss safety information, procedures and non-compliance with team members, drivers and the public • provide advice on safety training needs to individuals and work group • provide coaching and mentoring assistance to team members • consult with appropriate management on the training needs of team members.
Self-management skills to:	• work efficiently with minimal supervision.
Problem solving skills to:	• implement safety measures and risk controls for differing situations in the workplace and at motor sport events • devise methods to monitor the effectiveness of safety measures and risk controls.
Teamwork skills to:	• work as a leader of a team to ensure others' roles in the implementation of safety and risk management are understood.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURMSA3002 Implement and monitor safety and risk management in a motorsport environment

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMSA002 Implement and monitor safety and risk management in a motor sport environment

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- implement and monitor safety and risk management practice and procedures in:
  - one motor sport event
  - one motor sport workplace.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- relevant state or territory safety legislation, including:
  - employer responsibilities for safety of motor sport personnel
  - employee responsibilities to participate in work health and safety (WHS) practices
  - employee responsibility to ensure safety of self and others in the workplace
- procedures for distributing safety information to personnel
- common types of potential motor sport workplace hazards, risks and emergency situations
- procedures for performing risk analyses and applying appropriate control measures, including:
  - basic principles of risk management
  - commonly used hazard signs and safety symbols
  - common types and purpose of personal protective equipment (PPE)
- procedures for monitoring and evaluating safety control measures to maintain a safe work environment
- communication procedures, including reporting lines, within the motor sport environment

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- methods of maintaining and analysing accident and incident reports
- procedures for reporting workplace risks and hazards, including required documentation
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice relating to implementing and monitoring safety and risk management in a motor sport environment, including safety and environmental regulations.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having implemented and monitored safety and risk management, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport event and motor sport workplace
- legislative and workplace information on safety policies and procedures
- motor sport event documentation, including rules and regulations, safety procedures and event procedures
- applicable PPE and safety equipment and resources.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTA005 Perform pit lane and service area operations at motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to perform pit lane and service area operations within the time constraints of motor sport events. It involves preparing for the task, following safety procedures, and carrying out repairs, adjustments and service work on competition vehicles during pit lane, pit bay or service area stops.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for work	1.1 Job requirements are determined from ***event information***

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.2 Tools and equipment are selected and checked for serviceability 1.3 Hazards associated with the work are identified and risks are managed 1.4 Equipment and tooling are positioned to ensure clear movement paths 1.5 Work area is cleaned and laid out for job requirements
2. Follow pit lane and service area safety procedures	2.1 Jacks and other lifting devices, including lifting lock-outs, are fitted prior to underbody servicing 2.2 Fire hazard and prevention procedures are followed according to team procedures or event category rules and supplementary regulations 2.3 Pit lane and service area signals are used according to team procedures, and event category rules and supplementary regulations 2.4 Access to pit lane or service area and walkways by non-team members is monitored according to team procedures
3. Carry out pit stop repairs and adjustments on competition vehicle	3.1 Pit stop is initiated and competition vehicle components are checked according to team pit stop or service area schedule 3.2 Minor adjustments, emergency repairs, and component replacements are performed according to team instructions and ***safety and environmental requirements*** 3.3 Work practices and pit stop or service area procedures are modified to manage contingency issues 3.4 Problems are reported to team members according to workplace procedures
4. Conduct post-stop clean-up	4.1 Tools and equipment are prepared and positioned ready for next vehicle stop 4.2 Surplus components and consumables are tagged and stored 4.3 Spillages are cleaned and waste is disposed of according to environmental requirements 4.4 Team and event documentation is completed according to team procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• apply team procedures to different situations and motor sport events.
Reading skills to:	• interpret team instructions, specifications, event category rules and supplementary regulations.
Writing skills to:	• legibly and accurately fill out team and event documentation, and tag surplus components and consumables.
Oral communication skills to:	• communicate ideas and information when responding to issues during pit stops and competition vehicle servicing, and report problems for post-stop or post-event analysis.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate fuel quantity requirements.
Planning and organising skills to:	• plan and organise activities, including pit stop service procedures, to avoid backtracking or workflow interruptions.
Self-management skills to:	• work efficiently with minimal supervision.
Problem solving skills to:	• identify faults or required adjustments and apply analysis and judgement when interpreting instructions for adjustment and emergency repair within strict timeframes.
Teamwork skills to:	• work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow within strict timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Event information must include:	• team instructions • event category rules and supplementary regulations, including allowable configuration, quality, equipment and quantities.
Safety and environmental	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including:

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requirements must include:	• selecting and using personal protective equipment (PPE) • identifying acceptable tolerance levels for noise, heat and fumes • following pit lane and service area safety procedures • environmental requirements, including procedures for trapping, storing and disposing of fluids and contaminants released during pit lane and service area operations.

Unit Mapping Information

Equivalent to AURMTA3005 Perform pit lane and service area operations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTA005 Perform pit lane and service area operations at motor sport events

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- perform pit lane and service area operations on a competition vehicle at two different motor sport events, including at one sanctioned motor sport event.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to performing pit lane and service area operations, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - identifying acceptable tolerance levels for noise, heat and fumes
  - following pit lane and service area safety procedures
- environmental requirements, including procedures for trapping, storing and disposing of fluids and contaminants released during pit lane and service area operations
- key requirements of controlling body rules, category rules and supplementary regulations relating to above motor sport event
- procedures for pit lane and service area operations, including:
  - layout at an event
  - preparation processes
  - pit stop and service area sequence and conduct
  - pit lane and service area signals and communication techniques
  - emergency repair methods and procedures
  - procedures for reporting equipment faults and component defects
- procedures for completing event records.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the pit lane and service area operations they have performed at motor sport events, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- two different motor sport events, including one sanctioned motor sport event
- controlling body rules, category rules and supplementary regulations for the motor sport event
- personal and motor sport team safety procedures and requirements, including PPE
- motor sport team procedures and instructions
- one competition vehicle
- tools, equipment and service materials appropriate for performing pit lane and service area operations on competition vehicles.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTA006 Perform torquing and fastening on motor sport competition vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to torque and fasten motor sport competition vehicle components according to supplier and team specifications. It involves preparing for the task, selecting tools, fastening and securing components, and completing workplace processes and documentation.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Technical

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for work	1.1 Job requirements are determined from workplace instructions 1.2 Component supplier and team torquing and fastening specifications are sourced and interpreted 1.3 Tools and equipment are selected and checked for serviceability 1.4 Work area is cleaned and laid out for job requirements according to team procedures 1.5 Hazards associated with the work are identified and risks are managed 1.6 Problems with work area and operation of tools and equipment are reported to appropriate persons according to team procedures as required
2. Fasten components	2.1 Components to be fastened are inspected, prepared and assembled using gaskets, sealants, adhesives or lubricants as required and according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Components are installed and checked, and fasteners are tensioned according to team and ***manufacturer procedures*** 2.3 Mechanical fastener securing devices are fitted according to team and manufacturer procedures 2.4 Sealant and liquid locking adhesive cure times are observed according to team and manufacturer specifications as required 2.5 Component fastening problems are reported to appropriate persons according to team procedures as required
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to team procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret workplace instructions • interpret manufacturer specifications relating to torquing, fastener securing device, and sealant and liquid locking adhesives.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions • report problems in work area, tools, equipment and component fastening.
Numeracy skills to:	• interpret angle and torque units of measurement.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working safely with sealants, adhesives, lubricants and greases • environmental requirements, including procedures for trapping, storing and disposing of excess materials released during application of sealants and adhesives.
Manufacturer procedures must include:	• stages and sequence of torquing • torque settings.

Unit Mapping Information

Equivalent to AURMTA3006 Perform torquing and fastening

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTA006 Perform torquing and fastening on motor sport competition vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- torque the fasteners of three different competition vehicle components or sub-assemblies
- secure fasteners on six different competition vehicle components or sub-assemblies.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to torquing and fastening on motor sport competition vehicles, including procedures for working safely with sealants, adhesives, lubricants and greases
- environmental requirements, including procedures for trapping, storing and disposing of excess materials released during application of sealants and adhesives
- types, characteristics, uses and limitations of fasteners used in motor sport and performance enhancement, including:
  - clips, pins and clamps, nuts and bolts, and screws
  - material stress
- types, characteristics, uses and limitations of mechanical and liquid chemical fastener securing locking devices, including:
  - lock wire and lock tabs
  - liquid locking compounds and adhesives
  - shelf life expiry
- principles, applications, methods and techniques for torquing
- procedures for preparing competition vehicle components for assembly.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the torquing and fastening they have performed on motor sport competition vehicles, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport workplace or simulated workplace
- workplace instructions
- fasteners, locking devices, liquid locking compounds and adhesives
- manufacturer torquing and fastening specifications
- three different competition vehicle components or sub-assemblies that require torquing of their fasteners
- six different competition vehicle components or sub-assemblies that require fastening to other components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTA007 Conduct non-destructive testing

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to perform non-destructive testing on vehicle components and materials. It involves preparing for non-destructive testing, testing components and materials in order to determine component suitability and serviceability, and completing workplace processes.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for non-destructive testing	1.1 Job requirements are determined from workplace instructions 1.2 Non-destructive testing information is sourced and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Testing procedures are analysed, and those most appropriate for component material are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and testing equipment are selected and checked for serviceability, and inspection area is prepared for testing according to workplace procedures
2. Perform non-destructive testing activities	2.1 Testing is carried out according to workplace procedures and ***safety requirements*** 2.2 Test results are compared with component specifications and non-conformities and defects are identified as required 2.3 Findings are documented according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate component non-destructive testing procedures and specifications in workshop and manufacturer literature.
Reading skills to:	• interpret workplace instructions from repair orders • identify and interpret component specifications from technical literature • interpret non-destructive testing equipment safe operating procedures from operating manuals.

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Skills	Description
Writing skills to:	• record measurements and findings • legibly and accurately complete non-destructive testing documentation.
Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop manuals, and machinery dials and gauges.
Problem solving skills to:	• select best non-destructive testing options for the work and sequence the components of the procedure to reduce time and material wastage.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for using flammable and toxic dye penetrant sprays.

Unit Mapping Information

Equivalent to AURMTA3007Conduct non-destructive testing

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTA007 Conduct non-destructive testing

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out non-destructive testing on four different competition vehicle components, in which the work must involve:
  - dye-penetrant testing of one component
  - magnetic particle testing of one component.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to conducting non-destructive testing, including procedures for using flammable and toxic dye penetrant sprays
- types and limitations of non-destructive tests, including:
  - dye-penetrant
  - wet magnetic particle
  - Rockwell, Brinell and Vickers hardness
  - vacuum
  - pressure
- non-destructive testing procedures, including:
  - preparation, including methods of cleaning that do not mask faults
  - equipment use, maintenance and storage
  - analysis techniques
- procedures for recording results of non-destructive testing.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the non-destructive testing they have conducted on competition vehicle components, e.g. analysis documentation.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- component specifications
- four different competition vehicle components requiring the non-destructive testing specified in the performance evidence
- equipment, tools and materials appropriate for dye-penetrant testing and magnetic particle testing.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTA008 Apply aerodynamic and vehicle dynamic principles and effects to competition vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to determine aerodynamic and vehicle dynamic requirements of competition vehicles, devise improvement strategies, apply changes and test results. It involves preparing for the task, determining optimum settings, supervising configuration adjustments, applying dynamic principles, and testing vehicle aerodynamics. It requires understanding of the terminology, principles and effects of the physics involved in resistance and motion.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to determine optimum aerodynamic settings	1.1 Job requirements are determined from workplace instructions 1.2 Setting requirements are determined from ***motor sport event information*** 1.3 Regulations, specifications and tolerances are examined for possible competitive advantages 1.4 Specifications are checked for required ***known factors*** and any required clarification of specifications is sought 1.5 Hazards associated with the work are identified and risks are managed
2. Determine optimum tyre settings	2.1 Tyre setting requirements are calculated and determined according to known factors 2.2 Effects of selected tyre settings on overall vehicle performance are evaluated 2.3 Anticipated performance improvement is quantified and optimum settings are documented
3. Determine optimum steering and suspension settings	3.1 Steering and suspension setting requirements are calculated and determined according to known factors 3.2 Effects of selected steering and suspension settings on overall vehicle performance are evaluated 3.3 Anticipated performance improvement is quantified and optimum settings are documented
4. Determine optimum aerodynamic device settings	4.1 Aerodynamic device setting requirements are calculated and determined according to known factors 4.2 Effects of selected aerodynamic device settings on overall vehicle performance are evaluated 4.3 Anticipated performance improvement is quantified and optimum settings are documented
5. Supervise configuration of aerodynamic and vehicle dynamic settings	5.1 Tooling and equipment are selected and checked for serviceability 5.2 Aerodynamic and vehicle dynamic optimum settings are configured according to team procedures and ***safety requirements*** 5.3 Post-configuration checks are made to ensure accurate and complete changes according to team procedures and safety requirements 5.4 Problems with work area or operation of equipment are evaluated and decisions implemented as required

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	5.5 Proposals for modifications or adaptation of equipment or components are evaluated and implemented as required 5.6 Work area cleanliness and layout for job requirements are monitored
6. Test aerodynamic and vehicle dynamic settings	6.1 Test procedures are determined and settings are tested against anticipated performance improvement according to team procedures and safety requirements 6.2 Testing procedure and results are documented 6.3 Recommendations for setting usage are devised and implemented
7. Complete work processes	7.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 7.2 Work area is cleaned, waste and non-recyclable material are disposed of, and recyclable material is collected 7.3 Tools and equipment are checked and stored according to workplace procedures 7.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• adapt procedures to different vehicles, event venues and conditions.
Reading skills to:	• interpret team instructions and procedures and controlling body rules, category rules and supplementary regulations.
Writing skills to:	• legibly and accurately document optimum settings, performance specifications, and test results of aerodynamic and vehicle dynamic settings.
Oral communication skills to:	• discuss configuration of aerodynamic and vehicle dynamic settings with team members.
Numeracy skills to:	• understand units of length, mass, velocity, angles and force

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Skills	Description
	• use basic mathematical operations to calculate mass, velocity, angles and force.
Planning and organising skills to:	• supervise configuration of vehicle settings to minimise time and material wastage.
Problem solving skills to:	• analyse a number of factors, including event regulations and vehicle and event conditions, and determine optimum aerodynamic and vehicle dynamic settings.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Motor sport event information must include:	• controlling body rules • category rules • supplementary regulations • component supplier specifications • team requirements.
Known factors must include:	• regulatory constraints • budgetary constraints • load and speed characteristics • terrain and climate conditions • driver or rider preferences.
Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and managing risks.

Unit Mapping Information

Equivalent to AURMTA5008 Apply aerodynamic and vehicle dynamic principles and effects to competition vehicles

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTA008 Apply aerodynamic and vehicle dynamic principles and effects to competition vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- determine and supervise the configuration of the following settings on two different competition vehicles:
  - tyre settings
  - steering and suspension settings
  - aerodynamic device settings.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to applying aerodynamic and vehicle dynamic principles and effects to competition vehicles, including procedures for identifying hazards and managing risks
- key requirements of controlling body rules, category rules and supplementary regulations relating to establishing settings
- terminology, principles and effects of the physics involved in resistance and motion
- aerodynamic and vehicle dynamic principles and their effects on competition vehicles, including:
  - tyre settings, including:
    - construction and compound
    - size, including stagger
    - pressures
    - loadings
    - temperatures

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- steering and suspension settings, including:
  - wheel rate and linkage or leverage ratios
  - spring rate and spring pre-load
  - vehicle weight, sprung and unsprung weight
  - anti-roll bar rate where fitted
  - steering angles, including toe in and out, camber and caster
  - roll centres
  - ride height
  - centre of gravity
- aerodynamic device settings, including:
  - wing angles, height and location
  - body panels and fittings
  - ground effects and ride height
  - frontal areas
  - lift reduction and drag reduction
  - downforce generation
  - downforce and drag compromise
- competition vehicle test methods and procedures, including procedures for record keeping
- mathematical computations for determining optimum settings.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the competition vehicle settings they have configured, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport workplace or simulated workplace
- two different competition vehicles requiring configuration resetting

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- controlling body rules, category rules and supplementary regulations for a motor sport event
- tools and equipment appropriate for adjusting and modifying tyres, steering and suspension, and aerodynamic device settings.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTD001 Test suspension dampers using a dynamometer

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to use a dynamometer to test suspension dampers on a competition vehicle. It involves preparing for the task, conducting suspension damper testing, analysing and interpreting test results in order to maximise damper, and completing processes and documentation, including any associated recommendations for further action.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Technical - Steering and Suspension

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for	1.1 Job requirements are determined from team instructions, category

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
dynamometer operation	regulations and manufacturer procedures 1.2 Dynamometer is checked for calibration and serviceability, and is prepared for operation according to manufacturer specifications and team procedures 1.3 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** 1.4 Tools and equipment for securing dampers are selected and checked for serviceability
2. Conduct dynamometer testing	2.1 Appropriate load and run sequence and test parameters are determined 2.2 Dampers are connected and secured to dynamometer according to manufacturer specifications and team procedures 2.3 Selected dynamometer testing sequence is carried out according to manufacturer and team procedures and safety requirements, and results are documented 2.4 Dynamometer test data is analysed and conclusions are drawn about damper condition and performance according to manufacturer specifications and team procedures 2.5 Findings are reported to appropriate personnel, including recommendations based on dynamometer data for damper configuration or modifications to improve performance, according to team procedures 2.6 Damper modifications are carried out and tested on dynamometer according to manufacturer specifications, team procedures and safety requirements as required 2.7 Data is presented to team members according to team procedures
3. Complete work processes	3.1 Dynamometer shutdown procedure is carried out according to manufacturer specifications, team procedures and safety requirements 3.2 Dampers are disconnected from dynamometer according to manufacturer specifications and team procedures 3.3 Dynamometer, tools and associated equipment are checked, maintained and stored according to workplace procedures 3.4 Dynamometer test results are documented and stored according to team procedures to create or add to damper history

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret safe operating procedures for damper dynamometers from workplace and manufacturer literature • interpret information from manufacturer and workshop literature when seeking damper specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting findings and recording work completed.
Oral communication skills to:	• report findings and make recommendations for adjustments or modifications to the damper.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to measure length and force • interpret metric and imperial units of measurement.
Technology skills to:	• operate dedicated damper dynamometer.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for handling hot dampers.

Unit Mapping Information

Equivalent to AURMTD4001 Test suspension dampers using a dynamometer

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Links

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Assessment Requirements for AURMTD001 Test suspension dampers using a dynamometer

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- test, adjust and retest two different sets of competition vehicle dampers using a damper dynamometer.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to testing suspension dampers using a dynamometer, including procedures for handling hot dampers
- suspension damper principles, construction and operation, including:
  - compression and rebound
  - gas charged
- suspension damper modification and adjustment procedures
- application, purpose and operation of damper dynamometers, including associated hardware and software
- damper dynamometer testing procedures, including:
  - dynamometer preparation procedures
  - damper connection procedures
  - test environment correction factors
  - dynamometer data interpretation and analysis
- dynamometer maintenance procedures.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the suspension dampers that they have tested using a dynamometer, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport workplace or simulated workplace
- workplace instructions
- manufacturer specifications
- two different sets of competition vehicle dampers
- damper dynamometer
- tools and equipment appropriate for testing suspension dampers using a dynamometer.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTD002 Prepare competition vehicle suspension

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to test, dismantle, inspect, reassemble and adjust the suspension of a motor sport competition vehicle. It involves preparing for the task, selecting the correct preparation procedure, carrying out the task, performing post-preparation testing, and completing workplace processes and documentation. It requires the technical ability to determine competition vehicle suspension requirements and the effects of making changes to variables.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Technical - Steering and Suspension

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Determine competition vehicle suspension requirements	1.1 Job requirements are determined from workplace instructions and category regulations 1.2 Rules and regulations and vehicle specifications and tolerances are analysed for competitive advantage 1.3 Suspension requirements are determined according to vehicle operating criteria 1.4 Component requirements are documented and communicated to appropriate personnel
2. Prepare for work on suspension	2.1 Tools, equipment and materials are selected and checked for serviceability 2.2 Work area is cleaned and laid out for job requirements according to team requirements 2.3 Hazards associated with the work are identified and risks are managed according to ***safety requirements*** 2.4 Vehicle is cleaned and prepared for initial measurement according to team requirements 2.5 Existing suspension settings are measured and documented prior to component removal or adjustment according to workplace procedures 2.6 Problems with work area or operation of the equipment are reported to appropriate personnel as required
3. Dismantle, modify and assemble non-sealed dampers	3.1 Damper removal, testing and dismantling procedures are sourced and interpreted 3.2 Dampers are tested, dismantled, cleaned, inspected and measured for wear, and tolerances are determined according to manufacturer specifications and safety and ***environmental requirements*** 3.3 Dampers are replaced, repaired or modified as required according to manufacturer specifications, safety requirements and team procedures 3.4 Dampers are ***prepared and tested*** according to manufacturer specifications and procedures, and safety requirements
4. Dismantle, replace or change springs	4.1 Methods for removing and dismantling springs according to manufacturer specifications are sourced and interpreted 4.2 Spring dimensions are measured and documented before dismantling 4.3 Springs are disassembled and cleaned, and rates and tolerances are checked according to manufacturer specifications, workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures and safety requirements 4.4 Retention, replacement, adjustment or service of components is made according to team procedures 4.5 Replacement springs are checked as required for rate and wear according to manufacturer specifications, workplace procedures and safety requirements
5. Configure suspension components and settings	5.1 Removed suspension components are inspected for quality and readiness for installation 5.2 Sub-assemblies and fasteners are installed and tensioned in correct sequence according to manufacturer specifications, workplace procedures and safety requirements 5.3 Associated components, sub-assemblies and structural elements of vehicle affecting suspension configuration are checked for serviceability as required and according to manufacturer specifications, workplace procedures and safety requirements 5.4 Suspension components and settings are adjusted and configured within tolerances according to manufacturer specifications, workplace procedures and safety requirements 5.5 Suspension settings are documented and problems with vehicle sub-assemblies are reported to appropriate personnel according to workplace procedures
6. Complete work processes	6.1 Tools and equipment are checked and stored according to team procedures 6.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 6.3 Surplus material and components are checked and stored according to workplace requirements and problems are reported to appropriate personnel as required 6.4 Workplace documentation is processed according to team requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret controlling body rules, category rules and supplementary regulations • interpret information from manufacturer and workshop manuals when seeking suspension system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting component requirements and recording parts and material used.
Numeracy skills to:	• measure suspension system components and use mathematical basic mathematical operations including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• determine component settings to produce a competitive advantage while complying with rules and regulations.
Teamwork skills to:	• work as part of a team to ensure vehicle is prepared and maintained and time wastage is minimised.
Technology skills to:	• operate specialised suspension system testing equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE)
	  • managing stored energy in springs.

Environmental requirements must include:	• procedures for trapping, storing and disposing of fluids released from dampers.
Prepared and tested must include:	• amount and type of oil added, bled, bench tested and re-gassed.

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Unit Mapping Information

Equivalent to AURMTD4002 Prepare competition vehicle suspension

Links

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Assessment Requirements for AURMTD002 Prepare competition vehicle suspension

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- prepare the suspensions of two different competition vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to preparing competition vehicle suspension, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - managing stored energy in springs
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from dampers
- function, configurations, application and limitations of competition vehicle suspension systems
- suspension system dismantling and testing procedures, including:
  - suspension setting measurement procedures and calculations
  - on-vehicle damper and spring assembly testing procedures
  - damper and spring assembly removal and replacement procedures
  - damper bench-testing, dismantling, inspection, measurement and evaluation procedures
  - spring assembly off-vehicle testing, dismantling, inspection, measurement and evaluation procedures
- suspension system assembly and adjustment procedures, including:
  - damper oil refilling, bleeding and re-gassing procedures

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- spring assembly reassembly procedures
- suspension setting adjustment and configuration procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the competition vehicle suspensions that they have prepared, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport workplace or simulated workplace
- suspension components
- two different competition vehicles
- tools and equipment appropriate for preparing competition vehicle suspension.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTE001 Test engines using a dynamometer

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to test engines using a dynamometer. The engines being tested may be in a vehicle or stand alone. It involves preparing for the task, selecting the correct test procedure, carrying out testing, analysing test results, and completing workplace processes and documentation. It involves setting up and conducting dynamometer tests on engines, and logging, analysing and reporting the test data in order to maximise engine performance.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Technical - Engines

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for dynamometer operation	1.1 Job requirements are determined from ***test information*** 1.2 Dynamometer is checked for calibration and serviceability according to manufacturer and workplace procedures 1.3 Tools, equipment and materials are selected and checked for serviceability 1.4 Hazards associated with the work are identified and risks are managed according to ***safety and environmental requirements*** 1.5 ***Engine or vehicle is checked*** prior to testing according to manufacturer and workplace procedures 1.6 Engine or vehicle connections to dynamometer are checked and secured according to manufacturer, workplace and safety procedures
2. Conduct dynamometer testing	2.1 Appropriate load and run sequence and test parameters are determined, including run-in period for new engines 2.2 Selected dynamometer testing sequence is carried out according to manufacturer and team procedures and safety requirements, and data is documented 2.3 Correction factors are calculated and applied to data
3. Analyse test results	3.1 Dynamometer test data is analysed and conclusions are drawn about condition and performance of engine and associated systems according to manufacturer specifications and workplace procedures 3.2 Findings are reported based on dynamometer data, including recommendations for engine configuration and/or modifications to improve performance, according to workplace procedures 3.3 Recommended engine modifications are tested on dynamometer according to manufacturer and workplace procedures and safety requirements, and data is documented 3.4 Data is presented to team members according to workplace procedures
4. Complete work processes	4.1 Dynamometer shutdown procedure is carried out according to manufacturer and workplace procedures and safety requirements 4.2 Engine is disconnected from dynamometer according to manufacturer and workplace procedures 4.3 Dynamometer and associated equipment are checked and maintained according to workplace procedures 4.4 Tools and equipment are checked and stored according to workplace procedures

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	4.5 Workplace documentation, including dynamometer test results, are processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to engine dynamometer testing.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings.
Numeracy skills to:	• use basic mathematical operations to complete measurements, calculate analytical requirements, calibrate testing equipment, and present test results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Digital Literacy skills to:	• use dedicated engine dynamometer software.
Technology skills to:	• use specialised engine dynamometer equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Test information must	• workplace instructions

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include:	• category regulations and component supplier specifications, including allowable quality, materials, equipment and specifications.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • connecting and securing engines to dynamometers
	  • dealing with exhaust gases from engines
	  • dealing with high levels of noise
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released during engine testing.

Checking of engine or vehicle must include:	• engine oil level and condition • cooling system condition and coolant level • exhaust extraction system connection • drive shaft condition and connection.

Unit Mapping Information

Equivalent to AURMTE4001 Test engines using a dynamometer

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTE001 Test engines using a dynamometer

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out dynamometer testing on two different engines.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to testing engines using a dynamometer, including procedures for:
  - connecting and securing engines to dynamometers
  - dealing with exhaust gases from engines
  - dealing with high levels of noise
- environmental requirements, including procedures for trapping, storing and disposing of fluids released during engine testing
- application, purpose and operation of engine dynamometers, including associated hardware and software
- engine and chassis dynamometer testing procedures, including:
  - dynamometer preparation procedures
  - engine connection and securing procedures
  - vehicle connection and securing procedures
  - test environment correction factors
  - dynamometer data interpretation and analysis
- operator dynamometer maintenance procedures
- engine performance and dynamometer terminology.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engines that they have tested using a dynamometer, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- two different engines requiring testing using a dynamometer
- engine or chassis dynamometer
- tools and equipment appropriate for connecting, securing and disconnecting engines to dynamometers.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTF001 Analyse and repair performance carburetted fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and repair carburetted fuel systems and associated components. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. It involves developing and modifying performance improvement strategies in carburetted fuel systems and associated components. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Technical – Fuel Systems

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm effects of fault in carburetted fuel system	1.1 Objective of analysis and evaluation is determined from workplace instructions 1.2 Specifications for carburetted fuel system are accessed and interpreted 1.3 Details of fault are examined and available preliminary information is documented 1.4 Effects of fault are identified and confirmed from direct and indirect evidence 1.5 Hazards associated with the work are identified and risks are managed according to ***safety and environmental requirements***
2. Prepare for fault analysis	2.1 Evaluative criteria are developed or adopted to meet the objective of analysis and evaluation 2.2 ***Analytical and evaluative methodology*** are developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer and workplace procedures 2.4 Tools and materials required to support diagnostic procedure are selected and checked for serviceability 2.5 Possible causes of fault are identified from analysis of technical support information and available on-board diagnostic systems
3. Carry out analysis and determine repair and performance enhancement strategies	3.1 Selected analytical and evaluative methodology is followed according to manufacturer and workplace procedures 3.2 Tests are carried out according to manufacturer and workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluative criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements 3.6 Options for responding to analysis and evaluation objective are determined from further research of technical support information 3.7 ***Repair or modification method*** is selected and documented
4. Conduct repairs and implement performance improvement strategies	4.1 Repair tools and materials are selected and prepared 4.2 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, team requirements,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and safety and environmental requirements, and without causing damage to other components or systems 4.3 Post-repair testing and vehicle start-up are carried out to ensure performance and operation are to team requirements
5. Complete work processes	5.1 Tools and equipment are cleaned, maintained and prepared for future use, and stored according to manufacturer specifications and team requirements 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored and problems reported to appropriate personnel according to team requirements 5.4 Workplace documentation is processed according to team requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret controlling body rules, category rules and supplementary regulations • interpret information from manufacturer and workshop literature when seeking carburetted fuel system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting analysis findings.
Numeracy skills to:	• measure system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • interpret units of measurement of pressure and flow.
Planning and organising	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed

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Skills	Description
skills to:	within workplace timeframes.
Self-management skills to:	• work efficiently with minimum supervision.
Technology skills to:	• use precision measuring equipment, such as micrometers, vernier calipers, fuel pressure and flow rate gauges • use specialised fuel system diagnostic equipment, such as scan tools and data loggers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with petrol fuel systems • environmental requirements, including procedures for trapping, storing and disposing of petrol fuel released during repairs or testing.
Analytical and evaluative methodology must include:	• diagnostic process • sequence of process • tests • testing equipment.
Repair or modification method must suit:	• operating conditions • controlling body rules, category rules and supplementary regulations • financial implications.

Unit Mapping Information

Equivalent to.AURMTF4001 Analyse and repair complex performance carburetted fuel systems

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Links

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Assessment Requirements for AURMTF001 Analyse and repair performance carburetted fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and repair faults in the performance of the carburetted fuel systems of two different competition vehicles, including:
  - two of the following faults:
    - rough running
    - under or over fuelling
    - contamination or leaks
  - one of the following faults:
    - fuel cells venting
    - fuel pump pressure and/or flow regulation
- conduct post-repair checks on the above fuel systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) and environmental requirements relating to analysing and repairing performance carburetted fuel systems, including procedures for working with petrol fuel systems
- environmental requirements, including procedures for trapping, storing and disposing of petrol fuel released during repairs or testing
- types, function, operation and limitations of carburetted fuel systems and components, including:
  - properties of fuels used in the motor sport industry, including compatibility with carburetted fuel system components

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  - fuel system components, including:
    - rollover valves
    - fuel cells
    - fuel lines
    - breathers
    - pickup pumps
    - main pumps
    - filters
    - fuel pots, surge tanks and collector tanks
    - pressure and temperature sensors
  - multi-barrel carburettors, including:
    - two-barrel and four-barrel carburettors
    - two-stage carburettors, including vacuum and mechanical control of second stage
- diagnostic testing procedures of performance carburetted fuel systems, including:
  - fuel pump pressure, volume and vacuum testing
  - testing for air leaks
  - cold-start enrichment testing
  - exhaust gas analysis
- procedures for repair and improvement of performance carburetted fuel systems, including:
  - fuel pump installation
  - carburettor dismantling, cleaning, repair and reassembly
  - carburettor removal, replacement and adjustment
- post-repair testing procedures of performance carburetted fuel systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the complex performance carburetted fuel systems they have analysed and repaired, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for vehicle performance carburetted fuel systems
- two different competition vehicles with faults in their performance carburetted fuel systems
- diagnostic equipment for performance carburetted fuel systems, including exhaust gas analyser
- repair tools, equipment and materials appropriate for analysing and repairing performance carburetted fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTF002 Analyse and repair performance fuel injection systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and repair performance fuel injection systems and associated components. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. It also involves developing and modifying performance improvement strategies in fuel injection systems and associated components. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Technical - Fuel Systems

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm effects of faults in fuel injection system	1.1 Objective of analysis and evaluation is determined from workplace instructions 1.2 Specifications for fuel injection system are accessed and interpreted 1.3 Details of fault are examined and available preliminary information is documented 1.4 System faults, deficiencies or discrepancies are identified and confirmed from direct and indirect evidence 1.5 Hazards associated with the work are identified and risks are managed according to ***safety and environmental requirements***
2. Prepare for fault analysis	2.1 Evaluative criteria are developed or adopted to meet the objective of analysis and evaluation 2.2 ***Analytical and evaluative methodology*** are developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer and workplace procedures 2.4 Tools and materials required to support diagnostic procedure are selected and checked for serviceability 2.5 Possible causes of fault are identified from analysis of technical support information and available on-board diagnostic systems
3. Carry out analysis and determine repair and performance enhancement strategies	3.1 Selected analytical and evaluative methodology is followed according to manufacturer and workplace procedures 3.2 Tests are carried out according to manufacturer and workplace procedures and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluative criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements 3.6 Options for responding to analysis and evaluation objective are determined from further research of technical support information 3.7 ***Repair or modification method*** is selected and documented

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
4. Conduct repairs and implement performance improvement strategies	4.1 Repair tools and materials are selected and prepared 4.2 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, team requirements and safety and environmental requirements, and without causing damage to other components or systems 4.3 Post-repair testing and vehicle start-up are carried out to ensure performance and operation are to team requirements
5. Complete work processes	5.1 Tools and equipment are cleaned, maintained and prepared for future use, and stored according to manufacturer specifications and team requirements 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored and problems reported to appropriate personnel according to team requirements 5.4 Workplace documentation is processed according to team requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret controlling body rules, category rules, and supplementary regulations • interpret information from manufacturer and workshop literature when seeking fuel injection system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting analysis findings.
Numeracy skills to:	• measure fuel system components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications • interpret units of measurement of pressure and flow.

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Skills	Description
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Self-management skills to:	• work efficiently with minimal supervision.
Technology skills to:	• use precision measuring equipment, such as fuel pressure and flow rate gauges • use specialised fuel system diagnostic equipment, such as scan tools and data loggers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with petrol fuel systems • environmental requirements, including procedures for trapping, storing and disposing of petrol fuel released during repair or testing.
Analytical and evaluative methodology must include:	• diagnostic process • sequence of process • tests • testing equipment.
Repair or modification method must suit:	• operating conditions • controlling body rules, category rules and supplementary regulations • financial implications.

Unit Mapping Information

Equivalent to AURMTF4002 Analyse and repair performance fuel injection systems

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTF002 Analyse and repair performance fuel injection systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and repair faults in the performance of the fuel injection systems of three different competition vehicles, including:
  - two of the following faults:
    - rough running
    - under or over fuelling
    - contamination or leaks
  - one of the following faults:
    - fuel cell ventilation
    - pumps
    - pressure and/or flow regulation
- conduct post-repair checks on the above fuel systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and repairing performance fuel injection systems, including procedures for working with petrol fuel systems
- environmental requirements, including procedures for trapping, storing and disposing of petrol fuel released during repair or testing
- types, function, operation and limitations of fuel injection systems and components, including:

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- properties of fuels used in the motor sport industry, including compatibility with fuel injection system components
- fuel injection system components, including:
  - air intake systems
  - fuel delivery systems, including fuel rails
  - fuel filters
  - fuel pumps
  - fuel surge tanks
  - adjustable fuel pressure regulators
- fuel injectors, including peak-and-hold and saturated injectors:
  - fuel rails
  - fuel filters
  - fuel pumps
  - fuel surge tanks
  - adjustable fuel pressure regulators
- management systems, including:
  - pressure and temperature sensors
  - electronic control units
- diagnostic testing procedures of performance fuel injection systems, including:
  - symptom and cause differentiation
  - mapping fuel delivery
  - fuel trim and live data
  - fuel pump pressure, volume and vacuum testing
  - testing for air leaks
  - scan tool and data gathering
  - cold-start enrichment testing
  - exhaust gas analysis
- procedures for repair and improvement of performance fuel injection systems, including fuel system component removal, replacement or repair, and adjustment procedures
- post-repair testing procedures of performance fuel injection systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the performance fuel injection systems they have analysed and repaired, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for vehicle performance fuel injection systems
- three different competition vehicles with faults in their performance fuel injection systems
- diagnostic equipment for performance fuel injection systems, including:
  - exhaust gas analyser
  - scan tool or data logger
- tools, equipment and materials appropriate for analysing and repairing performance fuel injection systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTJ001 Select and prepare motor sport competition vehicle tyres and wheels

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to select and prepare tyres and wheels for motor sport vehicles to optimise handling performance. It involves identifying and confirming work requirements, preparing for work, identifying application requirements, selecting and preparing tyres, and completing workplace processes and documentation. It includes mounting wheels, conducting pre-race preparation, and post-race maintenance stock control and storage procedures.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Technical – Wheels and Tyres

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Determine and select competition vehicle tyres and wheels	1.1 Job requirements are determined from workplace instructions 1.2 Supplementary regulations and component supplier ***specifications*** are sourced and interpreted to gain a competitive advantage 1.3 Specifications are checked against required operating conditions to determine tyre and wheel requirements 1.4 Tyre and wheel assemblies to be used are selected according to job requirements, and are documented and reported to appropriate personnel as required
2. Prepare for mounting work	2.1 Tools and equipment are selected and checked for serviceability 2.2 Work area is cleaned and laid out according to job and team requirements 2.3 Hazards associated with the work are identified and risks are managed according to ***safety requirements***
3. Mount tyre and wheel assembly to vehicle	3.1 Mounting surfaces and threaded components are cleaned, checked for damage, and treated as required 3.2 Tyre and wheel assemblies are selected from stock according to ***markings*** and checked against criteria for event 3.3 Tyre and wheel assemblies are inspected for serviceability according to manufacturer and team procedures 3.4 Selected tyres and wheels are mounted to vehicle according to manufacturer specifications and procedures and safety requirements 3.5 Fasteners are tensioned according to component supplier specifications, and fastener locking device is engaged as required according to safety requirements 3.6 Accurate and complete fitting is checked during and after installation according to manufacturer and team procedures 3.7 Problems with tyre and wheel assemblies are reported to appropriate personnel
4. Conduct pre-race tyre and wheel preparation	4.1 Recommended cold tyre inflation pressures and optimum operating pressure requirements are sourced and interpreted 4.2 Tyre inflation pressures are set to specifications according to manufacturer specifications, team procedures and safety requirements 4.3 Base line tyre temperature and ambient and traction surface temperatures are measured and documented

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	4.4 Tyres are buffed, if specified, according to manufacturer specifications, team procedures and ***environmental requirements*** 4.5 Tyre warmers are fitted and turned on, if specified and allowed, according to manufacturer and team procedures
5. Conduct post-race tyre and wheel maintenance	5.1 Tyre pressures and temperatures are checked, tyre contact surface is analysed for handling and wear indications, and data is recorded according to team procedures 5.2 Driver or rider is questioned for assessment of vehicle handling characteristics and data is recorded according to team procedures 5.3 Additional data is sourced as required, and corresponding changes to tyres and wheels required for next race are determined 5.4 Tyres are changed to different compound or pattern as required and according to manufacturer specifications and team procedures 5.5 Removed tyres are tagged or marked for data audit trail according to team procedures
6. Complete work processes	6.1 Tyres are packed and stored according to team procedures 6.2 Tyre and wheel stock inventory is assessed, documented and reported to appropriate personnel 6.3 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 6.4 Tools and equipment are checked and stored according to workplace procedures 6.5 Workplace documentation is processed according to workplace and team procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret team instructions, manufacturer specifications, event category rules and supplementary regulations

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Skills	Description
	• interpret scrutineer, category official and team markings.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording tyre selections • tag and mark tyres for data audit trail • complete tyre and wheel stock inventory.
Numeracy skills to:	• interpret numerical information when selecting tyres, wheels and rims • understand units of temperature and pressure • interpret tyre codes.
Planning and organising skills to:	• ensure that tools, equipment, tyres and wheels are available to reduce the amount of track time lost.
Technology skills to:	• use specialised tyre handling and mounting equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Specifications must include:	• design • quality • materials • equipment • quantities.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • manually handling tyres and wheels
	  • selecting and using personal protective equipment (PPE).

Markings must include those of:	• scrutineer or category official • team.
Environmental requirements must include:	• procedures for trapping, storing and disposing of contaminants released during pre-race preparation and post-race maintenance of tyres and wheels.

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Unit Mapping Information

Equivalent to AURMTJ4001 Select and prepare tyres and wheels for motor sport applications

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTJ001 Select and prepare motor sport competition vehicle tyres and wheels

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- select, prepare and fit tyres and wheels to two different motor sport competition vehicles in differing conditions, including:
  - vehicle type
  - track surface
  - weather conditions.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to selecting and preparing motor sport tyres and wheels, including procedures for:
  - manually handling tyres and wheels
  - selecting and using personal protective equipment (PPE)
- environmental requirements, including procedures for trapping, storing and disposing of contaminants released during pre-race preparation and post-race maintenance of tyres and wheels
- key requirements of controlling body rules, category rules and supplementary regulations relating to selecting and preparing tyres and wheels for motor sport applications
- types, function, application and limitations of wheels and tyres, including:
  - handling characteristics
  - supplier tyre markings
- procedures for selecting tyres and wheels for motor sport applications, including tyre and wheel considerations for:

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  - vehicle type
  - track surface
  - weather conditions
- mounting procedures of wheel assemblies to vehicles, including:
  - tyre and wheel serviceability inspection techniques
  - mounting sequences and techniques
  - types of fasteners and locking devices
- pre-race tyre and wheel preparation procedures, including:
  - procedures for checking tyre, track and ambient temperatures
  - cold and operating or hot pressures of tyres
  - buffing procedures for tyres
  - warming procedures for tyres
- post-race tyre analysis procedures, including:
  - tyre contact surface wear analysis
  - driver or rider questioning techniques
  - tyre contact surface cleaning procedures
  - tyre measurement, including stagger calculations
- tyre storage procedures, including tyre and wheel stock inventory documentation methods.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the tyres and wheels they have selected and prepared for motor sport competition vehicles, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport workplace or simulated workplace
- two different motor sport competition vehicles
- motor sport tyres and wheels for differing conditions

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- tools and equipment for mounting and demounting tyres and wheels from motor sport vehicles
- equipment appropriate for measuring tyre pressure and temperature, and track and ambient temperatures.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTQ001 Analyse and repair faults in performance driveline systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and repair performance transmissions, final drive and drivelines, including engine to transmission drive couplings. It involves identifying, evaluating, selecting, justifying, documenting and carrying out the most appropriate rectification method or variation. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of analysis and evaluation is determined from workplace instructions 1.2 Specifications for driveline system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed from direct and/or indirect evidence, and are documented 1.4 Hazards associated with the work are identified and risks are managed according to ***safety and environmental requirements***
2. Prepare for analysis and repairs	2.1 Evaluative criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** are developed or identified from technical information 2.3 Possible causes of faults, including intermittent faults, are identified from analysis of technical support information and available on-board diagnostic systems 2.4 Diagnostic options are analysed and those most appropriate to the circumstances are selected 2.5 Test equipment is selected and prepared according to manufacturer procedures and team requirements 2.6 Tools and materials required to support the diagnostic process are selected and checked for serviceability 2.7 Vehicle driveline system and components are prepared for the diagnostic process
3. Carry out analysis and determine repairs and performance enhancement strategies	3.1 Selected analytical and evaluative methodology is followed according to manufacturer and workplace procedures 3.2 Tests are carried out according to manufacturer and workplace procedures and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against the evaluative criteria 3.5 Valid conclusions are drawn from the available evidence and documented to workplace requirements 3.6 Options for responding to the analysis and evaluation objective are determined from further research of technical support information 3.7 Repair or modification method is selected from an analysis of the options, operating conditions, controlling body rules, category

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	rules, and financial implications, and are documented
4. Conduct repairs and implement performance improvement strategies	4.1 Repair tools and materials are selected and prepared 4.2 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, team requirements, and safety and environmental requirements, and carried out without causing damage to other components or systems 4.3 Post-repair testing and vehicle start-up are carried out to ensure performance and operation are to team requirements
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret controlling body rules, category rules and supplementary regulations • interpret information from manufacturer and workshop literature when seeking driveline system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting analysis findings.
Numeracy skills to:	• measure system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.

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Skills	Description
	• interpret units of measurement of angles and torque.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as micrometers, verniers, torque wrenches and inclinometers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with hot and potentially toxic oils
	  • working with rotating driveline components
	• environmental requirements, including procedures for trapping, storing and disposing of oils released from driveline components.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

AURMTQ4001 Analyse and repair complex performance driveline systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTQ001 Analyse and repair faults in performance driveline systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out the analysis, repair and post-repair checks on two different competition vehicles with performance driveline system faults, including:
  - gear selection
  - noise
  - vibration
  - harsh engagement
  - slipping.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and repairing faults in performance driveline systems, including procedures for:
  - working with hot oils
  - working with rotating driveline components
- environmental requirements, including procedures for trapping, storing and disposing of oils released from driveline components
- types, function, operation and limitations of performance transmission, final drive and driveline components, including:
  - manual transmissions
  - automatic transmissions
  - drive shafts

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  - final drives
  - drive axles
- diagnostic testing procedures of performance driveline systems, including:
  - noise and vibration analysis
  - road testing procedures
  - scan tool and data logger
- procedures for the repair and improvement of performance driveline systems, including:
  - driveline component dismantling, cleaning, repair and reassembly procedures
  - driveline component replacement and adjustment procedures
- post-repair testing procedures of performance driveline systems, including gear selection.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the performance driveline systems that they have analysed and repaired, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- manufacturer specifications for vehicle performance driveline systems
- two different competition vehicles with faults in their performance driveline systems
- diagnostic equipment for performance driveline systems
- tools, equipment and materials appropriate for analysing and repairing performance driveline systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURMTS001 Construct hose and pipe assemblies for competition vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to construct hose and pipe assemblies for competition vehicles. It involves preparing for the task, selecting the correct assembly procedure, carrying out the assembly, performing post-assembly testing, and completing workplace processes and documentation. It includes calculating material requirements, selecting components, and constructing hose and pipe assemblies.

It applies to those working in the motor sport industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Motor Sport

Unit Sector

Technical - Fabrication

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for work	1.1 Job requirements are determined from ***competition information*** 1.2 Materials and consumables are selected and checked according to application and procedures to minimise waste material 1.3 Tools and equipment are selected and checked for serviceability 1.4 Hazards associated with the work are identified and risks are managed 1.5 Work area is cleaned and prepared according to job requirements
2. Construct hose and pipe assemblies	2.1 Hose and pipe length is measured and material requirements are calculated 2.2 Hose and pipe are cut to length according to according to team procedures and ***safety requirements*** 2.3 Hose and pipe are bent to conform to fitting requirements according to team procedures and safety requirements 2.4 Hose and pipe fittings are connected according to component supplier specifications and procedures and team requirements 2.5 Hose and pipe assembly is cleaned and pressure-tested according to component supplier specifications, team procedures and safety requirements
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable material is disposed of and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Surplus components and consumables are tagged and stored 3.5 Workplace documentation is processed according to team procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret team instructions, supplementary regulations, and component supplier specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting findings, and recording parts and material used.
Oral communication skills to:	• clarify instructions and report problems with the work area or the operation of equipment.
Numeracy skills to:	• measure hoses and pipes and use basic mathematical operations, including addition and subtraction, to calculate required material.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use hose and pipe bending and pressure-testing equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Competition information must include:	• team instructions • supplementary regulations and component supplier specifications, including allowable design, quality, materials, equipment and quantities.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for safely use:
	  • hose and pipe cutting equipment or machinery
	  • equipment for joining hoses and pipes to connectors.

Unit Mapping Information

Equivalent to AURMTS3001 Construct hose and pipe assemblies for competition vehicles

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURMTS001 Construct hose and pipe assemblies for competition vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- construct and test the following competition vehicle hose and pipe assemblies:
  - two different hose assemblies
  - two different pipe assemblies.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to constructing hose and pipe assemblies for competition vehicles, including procedures for safely use:
  - hose and pipe cutting equipment or machinery
  - equipment for joining hoses and pipes to connectors
- types of and procedures for selecting hoses, pipes and fittings, including:
  - sizing of hoses, pipes and fittings, including Army-Navy (AN) thread dash number, Society of Automotive Engineers (SAE) and National Pipe Thread (NPT)
  - swaged and reusable fittings
  - hose and pipe material and construction
  - compatibility of hose and pipe material with fuel, lubricants, coolants, chemicals and heat conditions
- construction procedures for hose and pipe assemblies, including:
  - methods for locating and determining the layout of hose and pipe assemblies
  - hose and pipe assembly measurement and cutting procedures
  - hose and pipe bending and flaring procedures

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  - hose and pipe assembly procedures
  - protection methods for hose and pipe assemblies
- post-construction testing procedures, including hose and pipe assembly flushing and testing procedures
- storage and maintenance procedures for hose and pipe assemblies.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the hose and pipe assemblies that they have constructed, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- motor sport workplace or simulated workplace
- instructions detailing customer requirements
- hose and pipe material required to construct two different hose assemblies and two different pipe assemblies, including hose and pipe fittings
- hose and pipe bending equipment
- hose and pipe assembly cleaning and pressure-testing equipment
- tools and equipment for hose and pipe construction.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURNTA001 Inspect, service and repair forklift mast assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, service and repair faults in forklift mast assemblies. It involves preparing for the task, inspecting the assembly to determine the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The forklift mast assemblies include those of agricultural machinery or forklift vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical - Lifting Equipment

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect,	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
service and repair forklift mast assembly	1.2 Inspect, service and repair procedures and information are sourced and interpreted 1.3 Options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Inspect forklift mast assembly	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Faults are identified from inspection results and causes of faults are determined 2.3 Inspection findings are reported according to workplace procedures, and include recommendations for necessary repairs or adjustments
3. Service and repair forklift mast assembly	3.1 Service and repair procedures and information are sourced and interpreted 3.2 Service and repair tools, equipment and materials are selected and prepared 3.3 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking forklift mast assembly specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify workplace instructions and determine job requirements.
Numeracy skills to:	• measure forklift mast assembly components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • understand measuring and test equipment divisions.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as pressure gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with hydraulic pressure
	  • manually handling forklift mast assembly components
	  • supporting and securing forklift mast assembly
	• environmental requirements, including procedures for trapping,

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	storing and disposing of lubricants and fluids released from forklift mast assembly.

Unit Mapping Information

Equivalent to AURNTA3001 Inspect, service and repair forklift mast assemblies

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURNTA001 Inspect, service and repair forklift mast assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, service and repair one forklift mast assembly, including:
  - carriage and forks
  - lifting chain
  - hydraulic system
  - mast operating levers and valves
  - mast and crosshead.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, servicing and repairing forklift mast assemblies, including procedures for:
  - working with hydraulic pressure
  - manually handling of mast forklift assembly components
  - supporting and securing forklift mast assembly
- environmental requirements, including procedures for trapping, storing and disposing of lubricants and fluids released from forklift mast assembly.
- operating principles of forklift mast assemblies
- identification, function and operation of the forklift mast assembly components specified in the performance evidence
- forklift mast assembly lubricant types and applications
- inspection procedures for forklift mast assemblies, including:

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  - component wear analysis
  - system operation analysis
- service and repair procedures for forklift mast assemblies, including removing, replacing, repairing, lubricating and adjusting forklift mast assembly components
- post-repair testing procedures for forklift mast assemblies, including system performance.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the forklift mast assemblies that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer forklift mast assembly specifications
- vehicle or machinery with forklift mast assembly requiring service and repair
- test equipment for forklift mast assemblies
- tools, equipment and materials appropriate for inspecting, servicing and repairing forklift mast assemblies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURPTR002 Test and service electric outdoor power equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to test and service electric outdoor power equipment according to manufacturer specifications. It involves preparing for the task, testing and servicing the equipment, performing post-service testing, and completing workplace processes and documentation.

It applies to those working in the outdoor power equipment service and repair industry. The electric outdoor power equipment may be 240 volt or cordless battery powered, and includes shears, blowers, shredders, mulchers, chainsaws, line trimmers, or lawn edgers. This unit does not apply to 240 volt portable generators.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Outdoor Power Equipment

Unit Sector

Technical - Electrical and Electronic

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for test	1.1 Job requirements are determined from workplace instructions 1.2 ***Test and service procedures*** and information are sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Test equipment*** and tools are selected and checked for serviceability
2. Conduct test and interpret results	2.1 Operational tests are carried out according to manufacturer specifications, workplace procedures, and ***safety requirements*** 2.2 Test results are compared with manufacturer specifications 2.3 Authorisation to proceed is obtained according to workplace procedures
3. Prepare to service equipment	3.1 Service options are analysed and those most appropriate to the circumstances are selected 3.2 Tools, equipment and materials are selected and checked for serviceability
4. Service equipment	4.1 Components are serviced, adjusted and replaced according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 4.2 Post-service testing is carried out according to workplace procedures
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and electrical equipment is presented ready for use, including protective guards, cowlings and safety features 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.2 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking test and service specifications and procedures relating to electric outdoor power equipment.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, and recording parts and material used.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, when testing and servicing electric outdoor power equipment according to manufacturer specifications • interpret gauges and test equipment.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• operate electrical equipment, such as load test equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Test and service procedures must include:	• brush serviceability • resistive load testing • motor speed • circuit breaker • battery condition • battery charger.
Test equipment must	• multimeter and electrical testing equipment

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include:	• circuit tester and load testing device.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
	  • procedures for selecting and using personal protective equipment (PPE)
	  • observing warnings in relation to working with 240 volt systems
	  • procedures for safely using electrical test equipment.

Environmental requirements must include:	• environmental requirements, including procedures for disposing of battery packs.

Unit Mapping Information

Equivalent to AURPTR2002 Test and service outdoor electric powered equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURPTR002 Test and service electric outdoor power equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- test and service:
  - two different 240 volt electric outdoor power equipment
  - two different cordless battery powered outdoor equipment.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to and environmental requirements relating to the test and service of electric outdoor power equipment, including:
  - procedures for selecting and using personal protective equipment (PPE)
  - observing warnings in relation to working with 240 volt systems
  - procedures for safely using electrical test equipment
- environmental requirements, including procedures for disposing of battery packs
- application, purpose and operation of 240 volt and cordless battery powered outdoor electric equipment
- licensing and regulatory requirements for 240 volt components
- test and service procedures for 240 volt electric outdoor power equipment, including:
  - brush assembly
  - resistive load testing
  - circuit breaker
  - stator windings
  - rotor windings

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  - handle, mountings and frame
  - electrical leads
  - switch
  - protective guards
- test and service procedures for cordless battery powered outdoor electric equipment, including:
  - brush assembly
  - resistive load testing
  - circuit breaker
  - stator windings
  - rotor windings
  - handle, mountings and frame
  - electrical leads
  - switch
  - protective guards
  - battery
  - battery charger
- post-repair testing procedures for electric outdoor power equipment, including operating equipment through its full operating range.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electric outdoor power equipment that they have tested and serviced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- outdoor power equipment repair workplace or simulated workplace
- workplace instructions

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- manufacturer electric outdoor power equipment specifications
- area and equipment, including PPE, for safely testing electric outdoor power equipment
- electric powered equipment specified in the performance evidence requiring servicing
- tools, equipment and materials appropriate for testing and servicing electric outdoor power equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRGA001 Launch and recover vessels using a trailer

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to use a trailer to launch and recover a motor-driven vessel in an estuary or seaway. It involves preparing for the task, conducting a vessel pre-launch safety inspection, launching the vessel into the water, and recovering the vessel from the water.

It applies to those working in the marine service and repair industry. The vessels are those up to 10 metres in length with a maximum beam of 2.5 metres.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Marine

Unit Sector

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to launch vessel	1.1 Job requirements are determined from workplace instructions 1.2 Tools and equipment are selected and checked for serviceability 1.3 Weather, tides and launch site are checked for safe launch

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	conditions 1.4 Hazards associated with the work are identified and risks are managed
2. Conduct pre-launch safety inspection	2.1 Vessel safety equipment is audited 2.2 Vessel systems and components are checked for seaworthiness, and compliance with manufacturer specifications and applicable state and territory regulations 2.3 Trailer is checked for compliance with manufacturer specifications and applicable state and territory regulations 2.4 Systems and components that fail the vessel and trailer check are recorded, and supervisor and owner are notified
3. Launch vessel	3.1 Vehicle is manoeuvred to position trailer in suitable depth of water on launch site according to manufacturer and workplace procedures and safety requirements 3.2 Vessel is tethered to trailer using suitable rope and knots 3.3 Winch mechanism is operated, safety chain removed, and vessel allowed to slide from trailer according to manufacturer and workplace procedures, ***safety requirements***, and state and territory marine safety laws 3.4 Vessel is moved from launch site to safe area in water according to state and territory marine safety laws 3.5 Vehicle and trailer are parked in a suitable area
4. Recover vessel	4.1 Vehicle is manoeuvred to position trailer in suitable depth of water on launch site according to state and territory marine safety laws 4.2 Detachable trailer fixtures are removed and trailer retrieval guide poles fitted as required 4.3 Vessel is manoeuvred into recovery area and aligned with trailer guides and rollers 4.4 Vessel is tethered to trailer using suitable rope and knots 4.5 Winch mechanism is operated and vessel is pulled on to trailer without causing damage to vessel or trailer 4.6 Vessel is secured to trailer according to manufacturer specifications and applicable state and territory regulations

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret safe operating procedures for vessel launch and recovery equipment from workplace and manufacturer literature • interpret weather and tide information.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting safety inspection findings.
Oral communication skills to:	• clarify instructions • report safety inspection findings.
Numeracy skills to:	• calculate tare weight, gross vehicle mass and aggregate trailer mass, and compare with manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• assess different launch and recovery situations and determine safest method of work.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE), including personal flotation devices
	  • working safely with rope, chain and steel cables.

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Unit Mapping Information

Equivalent to AURRGA3001 Launch and recover a vessel using a trailer

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRGA001 Launch and recover vessels using a trailer

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- launch and recover two different vessels of up to 10 metres in length with a maximum beam of 2.5 metres, from different trailers.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to launching and recovering vessels using a trailer, including procedures for:
  - selecting and using personal protective equipment (PPE), including personal flotation devices
  - working safely with rope, chain and steel cables
- tare weight, gross vehicle mass and aggregate trailer mass regulations relating to trailer weights on single, dual and tri-axle trailers
- pre-launch inspection procedures, including inspection procedures for:
  - vessel safety equipment, including:
    - life jackets
    - anchors
    - bailer or fire bucket and lanyard
    - bilge pump
    - compass
    - distress flares
    - emergency position indicating radio beacon (EPIRB)
    - fire extinguisher

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    - map
    - marine radio
    - paddles and oars
    - safety and capacity labels
    - sound signals
    - drinking water
    - waterproof torch
  - hulls and fittings
  - trailers, including trailer winch mechanisms
- state or territory legislation, regulations, marine safety laws, standards and codes of practice relating to marine launch sites
- vessel launching and recovery procedures, including:
  - methods of determining water depth required for vessel flotation
  - type, application and operation of trailer winches
  - rope knots applicable to launching and recovering vessels
  - methods of securing vessels to trailers.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vessels that they have launched and recovered using a trailer, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- launch site at an estuary or seaway
- two different vessels as specified in the performance evidence on different trailers
- state and territory marine safety laws
- tools, equipment and materials appropriate for inspecting, launching and recovering vessels.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRGA002 Use cranes, gantries and forklifts to launch and recover vessels

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to use a crane, gantry or forklift to launch and recover a vessel. It involves checking launch site conditions, conducting vessel and launching equipment safety inspections, launching the vessel into the water, and recovering the vessel from the water.

It applies to those working in the marine service and repair industry. The vessels are those up to 10 metres in length with a maximum beam of 2.5 metres.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Marine

Unit Sector

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to use crane, gantry or forklift to	1.1 Job requirements are determined from workplace instructions 1.2 Launch and recovery equipment is selected according to job

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
launch vessel	requirements, and checked for safe operation according to manufacturer specifications and workplace procedures 1.3 Hazards associated with the work are identified and risks are managed
2. Conduct pre-launch safety inspection	2.1 Weather, tides and launch site are checked for safe launch conditions 2.2 Vessel safety equipment is audited 2.3 Vessel systems and components are checked for seaworthiness, and compliance with manufacturer specifications and applicable state and territory regulations 2.4 Systems and components that fail the vessel check are recorded, and supervisor and owner are notified
3. Launch vessel	3.1 Slings and lifting equipment are attached and positioned to hull according to manufacturer and workplace procedures and ***safety requirements*** 3.2 Crane, gantry or forklift is operated and manoeuvred to place vessel in suitable depth of water at launch site, according to manufacturer and workplace procedures and safety requirements, and without causing damage to vessel or the environment 3.3 Slings and lifting equipment are removed from vessel according to manufacturer and workplace procedures and safety requirements 3.4 Vessel is moved from launch site to safe area in water according to state and territory marine safety laws 3.5 Crane, gantry or forklift is moved from launch site according to manufacturer and workplace procedures and safety requirements
4. Recover vessel	4.1 Crane, gantry or forklift is positioned at lift point ensuring suitable depth of water is present according to manufacturer and workplace procedures and safety requirements 4.2 Vessel is manoeuvred into recovery area according to state and territory marine safety laws, and aligned with lifting equipment 4.3 Slings and lifting equipment are attached and positioned to hull according to manufacturer and workplace procedures and safety requirements 4.4 Crane, gantry or forklift is operated and manoeuvred to remove vessel from water according to manufacturer and workplace procedures and safety requirements, and without causing damage to vessel, lifting equipment or physical surrounds 4.5 Vessel is secured in storage or transport location and slings and

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	lifting equipment are removed from vessel according to manufacturer and workplace procedures and safety requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret safe operating procedures for vessel launch and recovery equipment from workplace and manufacturer literature • interpret weather and tide information.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings.
Oral communication skills to:	• clarify instructions • report safety inspection findings.
Numeracy skills to:	• calculate tare weight, gross vehicle mass, and aggregate trailer mass and compare with manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• assess different launching and recovery situations and determine safest method of work.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • determining safe lifting limits of cranes, gantries and forklifts • positioning slings and lifting equipment.

Unit Mapping Information

Equivalent to AURRGA3002 Launch and recover a vessel from crane, gantry and forklift

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRGA002 Use cranes, gantries and forklifts to launch and recover vessels

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- launch and recover two vessels of up to 10 metres in length with a maximum beam of 2.5 metres, using a crane, gantry or forklift.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to launching and recovering a vessel using a crane, gantry or forklift, including procedures for:
  - determining safe lifting limits of cranes, gantries and forklifts
  - positioning slings and lifting equipment
- pre-launch inspection procedures, including inspection procedures for:
  - vessel safety equipment, including:
    - life jackets
    - anchors
    - bailer or fire bucket and lanyard
    - bilge pump
    - compass
    - distress flares
    - emergency position indicating radio beacon (EPIRB)
    - fire extinguisher
    - map

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    - marine radio
    - paddles and oars
    - safety and capacity labels
    - sound signals
    - drinking water
    - waterproof torch
  - hulls and fittings
  - cranes, gantries and forklifts
- state or territory legislation, regulations, marine safety laws, standards and codes of practice relating to marine launch sites
- vessel launching and recovery procedures, including:
  - procedures for determining water depth required for vessel flotation
  - type, application and operation of cranes, gantries and forklifts, including:
    - lifting sling equipment and vessel attachment points
    - techniques for manoeuvring a crane, gantry, forklift and attached vessel.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vessels that they have launched and recovered using a crane, gantry or forklift, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- launch site at an estuary or seaway
- two different vessels as specified in the performance evidence
- crane, gantry or forklift appropriate for launching and recovering vessels
- state and territory marine safety laws
- tools, equipment and materials appropriate for inspecting, launching and recovering vessels using a crane, gantry or forklift.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRGA003 Moor motor-driven vessels

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to moor and dock a motor-driven vessel to or from a dockside or swing mooring. It involves preparing for the task, conducting a vessel and equipment safety inspection, moving the vessel from its mooring into a safe area of water, and returning the vessel to its mooring.

It applies to those working in the marine service and repair industry. The vessels are those up to 19 metres in length.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Marine

Unit Sector

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare vessel	1.1 Job requirements are determined from workplace instructions 1.2 Tools and equipment, including personal flotation device, are selected and checked for serviceability

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Weather, tides and mooring site are checked for safe mooring conditions 1.4 Hazards associated with the work are identified and risks are managed
2. Conduct safety inspection prior to moving off	2.1 Vessel safety equipment is audited 2.2 Vessel systems and components are checked for seaworthiness, and compliance with manufacturer specifications and applicable state and territory regulations 2.3 Engine is started and controls are checked for seaworthiness and compliance with manufacturer specifications 2.4 Systems and components that fail the vessel check are recorded and supervisor and owner are notified
3. Move off mooring	3.1 Lines are removed and stowed using suitable knots 3.2 Vessel is ***manoeuvred from mooring*** according to ***safety requirements*** 3.3 Vessel is moved from mooring to safe area in water according to state and territory marine safety laws
4. Dock and moor vessel	4.1 Mooring site appropriate for vessel and attachment equipment are selected 4.2 Attachment points on mooring dock and vessel are located and checked 4.3 Vessel is manoeuvred to mooring site according to state and territory marine safety laws 4.4 Vessel is aligned to mooring site and attachment equipment is secured according to state and territory marine safety laws 4.5 Vessel is secured to mooring site using appropriate dock lines, knots and buffering equipment according to state and territory marine safety laws

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret safe operating procedures for vessel mooring equipment from workplace and manufacturer literature • interpret weather and tide information.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting safety inspection findings.
Oral communication skills to:	• clarify instructions • report safety inspection findings.
Numeracy skills to:	• interpret instrument gauges to determine vessel speed.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• assess different launching and recovery situations and determine safest method of work.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Manoeuvring from mooring must take into account:	• currents • tides • weather conditions • other vessels.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE), including personal flotation devices
	  • following state or territory legislation, regulations and marine safety laws relating to operating a vessel in an estuary or seaway.

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Unit Mapping Information

Equivalent to AURRGA3003 Moor a motor-driven vessel

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRGA003 Moor motor-driven vessels

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- moor two different motor-driven vessels of up to 19 metres in length, in which the work must involve mooring vessel to, off and away from:
  - a swing mooring
  - a dockside.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to mooring motor-driven vessels, including procedures for:
  - selecting and using personal protective equipment (PPE), including personal flotation devices
  - following state or territory legislation, regulations and marine safety laws relating to operating a vessel in an estuary or seaway, including:
    - holding a boat driver licence
    - speed restrictions
    - navigation rules
    - boat capacity
- safety inspection procedures, including inspection procedures for:
  - vessel safety equipment, including:
    - life jackets
    - anchors
    - bailer or fire bucket and lanyard

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    - bilge pump
    - compass
    - distress flares
    - emergency position indicating radio beacon (EPIRB)
    - fire extinguisher
    - map
    - marine radio
    - paddles and oars
    - safety and capacity labels
    - sound signals
    - drinking water
    - waterproof torch
  - hulls and fittings, including mooring fittings
- inspection procedures for mooring sites, including:
  - rope and chain condition
  - shackle condition
  - buoy condition
  - wharf or pier condition
- knot types for a variety of situations, including dock, fixed pier, jetty, wharf, concrete pontoon and plastic pontoon
- types and application of swing moorings, including single point moorings and twin moorings
- procedures for mooring a vessel, including manoeuvring techniques to position vessel according to tides and currents.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the motor-driven vessels that they have moored, e.g. photographs of moored vessels.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- moorings for vessels, including a swing mooring and a dockside mooring
- two different motor-driven vessels up to 19 metres in length requiring mooring
- state and territory marine safety laws
- tools, equipment and materials appropriate for inspecting and mooring motor-driven vessels.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTA006 Water test vessels

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to water test a vessel in order to meet specific customer performance specifications and ensure compliance with statutory regulations. It involves preparing for the task, conducting a vessel safety inspection, water testing the vessel on a waterway, and completing work processes and documentation, including any associated recommendations for further action.

It applies to those working in the marine service and repair industry.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Marine

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to water test	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
vessel	1.2 Water testing procedures and information are accessed and interpreted 1.3 Water testing options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability
2. Conduct safety inspection	2.1 Vessel safety equipment is audited 2.2 Vessel systems and components are checked for seaworthiness, and compliance with manufacturer specifications and applicable state and territory regulations 2.3 Vessel is checked for safety using testing equipment, as required 2.4 Systems and components that fail the safety test are recorded, and supervisor and owner are notified
3. Undertake water testing activities	3.1 Engine performance is tested according to manufacturer specifications, workplace procedures, ***safety requirements,*** and state and territory marine safety laws 3.2 Propulsion unit is tested according to manufacturer specifications, workplace procedures, safety requirements, and state and territory marine safety laws 3.3 Hull and hull fittings are tested according to manufacturer specifications, workplace procedures, safety requirements, and state and territory marine safety laws 3.4 Vessel systems that fail water testing are reported according to workplace procedures, and include recommendations for required repairs or adjustments
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vessel is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret safe operating procedures for vessels from workplace and manufacturer literature • interpret water testing procedures from manufacturer procedures • interpret information from manufacturer and workshop manuals when seeking vessel specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting findings and recording work completed.
Oral communication skills to:	• clarify instructions, report findings, and gain customer consent for required rectification measures.
Numeracy skills to:	• interpret numbers on measuring equipment and vessel gauges • use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use measuring equipment, such as multimeters, tachometers and battery load testers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE, including personal flotation devices
	  • following state or territory legislation, regulations and marine safety laws relating to operating a vessel in an estuary or seaway.

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Unit Mapping Information

Equivalent to AURRTA3006 Water test a vessel

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTA006 Water test vessels

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- water test two different vessels with engines, propulsion units and hull fittings, in which the work must involve water testing navigation lights and safety equipment.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to water testing vessels, including procedures for:
  - selecting and using personal protective equipment (PPE), including personal flotation devices
  - following state or territory legislation, regulations and marine safety laws relating to operating a vessel in an estuary or seaway, including:
    - holding a boat driver licence
    - speed restrictions
    - navigation rules
    - boat capacity
- pre-launch inspection procedures, including inspection procedures for:
  - vessel safety equipment, including:
    - life jackets
    - anchors
    - bailer or fire bucket and lanyard
    - bilge pump
    - compass
    - distress flares

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        - emergency position indicating radio beacon (EPIRB)
        - fire extinguisher
        - map
        - marine radio
        - paddles and oars
        - safety and capacity labels
        - sound signals
        - drinking water
        - waterproof torch
    - hulls and fittings
    - navigation lights
    - steering system
    - fuel system
- factors influencing vessel performance, including:
    - basic hull design and hydrodynamics
    - hull type, including:
        - planing
        - displacement
        - single and multi-hull
        - hull fittings
    - engine, including:
        - type
        - size
        - single and multi-cylinder
    - engine and hull match
    - engine propeller match
    - vessel, including:
        - type
        - size
        - age
- modifications and additions to existing vessel
    - water testing procedures for vessels, including water testing engine performance, propulsion units, and hull and hull fittings, including:
    - testing engine performance by operating engine through full operating range
    - testing propulsion unit by operating through full range of speeds and directions
    - testing hull and hull fittings by operating through full range of performance conditions
    - testing to establish that current configuration is performing to manufacturer specifications
- procedures for test report compilation and presentation.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vessels that they have water tested, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- appropriate waterway for water testing a vessel
- workplace instructions
- manufacturer vessel specifications
- state and territory marine safety laws
- two different vessels requiring water testing
- tools, testing equipment and materials appropriate for water testing vessels.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTA007 Analyse and evaluate faults in light marine hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in light marine hydraulic systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the marine service and repair industry on inboard, outboard or jet drive marine vessels.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for light marine hydraulic system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Hydraulic system and components are prepared for the diagnostic process
3. Carry out analysis and evaluation	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 ***Tests*** are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to light marine hydraulic systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised light marine hydraulic diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with:
	  • fluids under pressure
	  • stored pressure hazards
	  • hot fluid hazards
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from hydraulic systems.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.
Tests must include:	• stroke times for tilt and trim operation • leak down and creep • full load water testing.

Unit Mapping Information

Equivalent to AURRTA5007 Analyse and evaluate light marine hydraulic system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTA007 Analyse and evaluate faults in light marine hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the hydraulic systems of three different light marine vessels
- the above analysis and evaluation must involve three of the following systems:
  - power assisted steering
  - hydraulic steering
  - bow thruster
  - trim tabs
  - tilt and trim
  - winch.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in light marine hydraulic systems, including procedures for working with:
  - fluids under pressure
  - stored pressure hazards
  - hot fluid hazards
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from hydraulic systems
- principles and processes involved in planning and implementing analysis and evaluation of light marine hydraulic system faults

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- design and planning of diagnostic procedures of light marine hydraulic system faults, including procedures for diagnosing:
  - hydraulic faults
  - mechanical faults
  - electrical faults
- procedures for analysing and evaluating light marine hydraulic system faults, including:
  - system failure analysis
  - component failure analysis
- hydraulic principles, including pressure, flow and force
- mechanical principles, including levers and mechanical advantage
- types, functions, operation and limitations of light marine hydraulic systems, including:
  - power assisted steering
  - hydraulic steering
  - bow thruster
  - trim tabs
  - tilt and trim
  - winches
- vessel systems and their impact on light marine hydraulic system operation, including vessel electrical system
- testing procedures for light marine hydraulic systems, including:
  - stroke times for tilt and trim operation
  - leak down and creep
  - full load water testing
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in light marine hydraulic systems
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to light marine hydraulic systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light marine hydraulic systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer hydraulic system specifications
- three different light marine vessels with faults in the systems specified in the performance evidence
- diagnostic equipment for light marine hydraulic systems
- tools, equipment and materials appropriate for analysing and evaluating light marine hydraulic systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTA008 Analyse and evaluate faults in light marine hull performance and stability systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in light marine hull performance and stability systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the marine service and repair industry on inboard or outboard marine vessels.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for light marine hull performance and stability system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Performance and stability system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 ***Tests*** are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to light marine performance and stability systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised light marine performance and stability diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with rotating shafts and propellers.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.
Tests must include:	• engine performance and maximum speed • propeller matching • hull performance and stability water tests • hull integrity.

Unit Mapping Information

Equivalent to AURRTA5008 Analyse and evaluate light marine hull performance and stability system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTA008 Analyse and evaluate faults in light marine hull performance and stability systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the hull performance and stability system of three different light marine vessels
- the above analysis and evaluation must involve the following:
  - engine performance and maximum speed
  - propeller matching
  - hull integrity.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in light marine hull performance and stability systems, including procedures for working with rotating shafts and propellers
- principles and processes involved in planning and implementing analysis and evaluation of light marine hull performance and stability systems
- design and planning of diagnostic procedures of light marine hull performance and stability systems
- types, functions, operation and limitations of light marine hull performance and stability systems, including:
  - marine two-stroke, four-stroke and diesel engines
  - marine engine installation and rigging techniques to applicable specifications
  - propeller selection techniques and procedures
  - boat trimming methods and planning aspects

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    - marine hull performance and design characteristics
- vessel systems and their impact on light marine hull performance and stability system operation, including weight distribution of vessel components
- testing procedures for light marine hull performance and stability systems, including:
    - engine performance and maximum speed
    - propeller matching
    - hull performance and stability water tests
    - hull integrity
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in light marine hull performance and stability systems
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to light marine hull performance and stability systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light marine performance and stability systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer hull performance and stability system specifications
- three different light marine vessels with faults in the hull performance and stability systems specified in the performance evidence
- diagnostic equipment for light marine hull performance and stability systems
- tools, equipment and materials appropriate for analysing and evaluating light marine hull performance and stability systems.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTA009 Recommission vessels and engine systems

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to prepare vessels and their engine systems for use after seasonal shutdown and storage. It involves testing the vessel and engine systems, reporting faults, recommissioning the vessel and engine systems, and determining the need for water testing.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to recommission vessel	1.1 Job requirements are determined from workplace instructions 1.2 Recommissioning procedures and information are accessed and

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
systems	interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment are selected and checked for serviceability
2. Recommission vessel systems	2.1 Vessel systems are tested according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Vessel systems that fail testing are reported according to workplace procedures, and rectification approval is gained from customer 2.3 Vessel systems are adjusted and re-tested as required according to manufacturer specifications, workplace procedures, and safety and environmental requirements
3. Recommission vessel engine systems	3.1 Vessel engine systems are tested according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.2 Vessel engine systems that fail testing are reported according to workplace procedures, and rectification approval is gained from customer 3.3 Vessel engine systems are adjusted and re-tested as required according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and the need for water testing is determined
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vessel is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking vessel and engine system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting findings and recording work completed.
Oral communication skills to:	• clarify instructions, report findings, and gain customer consent for required rectification measures.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate amounts and ratios of fluids.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use measuring equipment, such as battery load testers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for checking and dealing with flammable gas build-up in boats
	• environmental requirements, including:
	  • procedures for trapping, storing and disposing of fluids drained from engine systems
	  • procedures for disposing of batteries.

Unit Mapping Information

No equivalent unit.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTA009 Recommission vessels and engine systems

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- recommission two different vessels and their engine systems, in which the work must involve:
  - preparing vessel systems for use, including:
    - electrical systems
    - steering system
    - safety systems
  - preparing engine systems for use, including:
    - fuel system
    - cooling system
    - driveline system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to recommissioning vessels and engine systems, including procedures for checking and dealing with flammable gas build-up in boats
- environmental requirements, including:
  - procedures for trapping, storing and disposing of fluids drained from engine systems
  - procedures for disposing of batteries
- recommissioning procedures for vessel and engine systems, including:
  - properties and use of servicing fluids, lubricants and anti-corrosion products used in recommissioning procedures

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- preparing vessel systems for use, including:
  - electrical and on-board electronic systems
  - steering system
  - safety systems, including procedures for checking flotation devices and fire extinguishers
- preparing engine systems for use, including:
  - fuel system
  - cooling system
  - driveline system
- post-recommissioning testing procedures for vessel systems, including procedures for water testing vessels and systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vessels that they have recommissioned, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer vessel specifications
- two different vessels and associated engine systems requiring recommissioning
- testing equipment for vessel systems
- tools, equipment and materials appropriate for recommissioning vessels and engine systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTC001 Diagnose and repair marine exhaust and cooling systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the exhaust and cooling systems of marine vessels. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical – Cooling Systems

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
repair marine exhaust and cooling system	1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose exhaust and cooling system	2.1 Diagnostic tests are performed according to workplace procedures and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Dismantle exhaust and cooling system	3.1 Tools, equipment and materials are selected and checked 3.2 Exhaust and cooling system is dismantled as required according to workplace procedures, and safety and ***environmental requirements*** 3.3 Exhaust and cooling system is cleaned and its components are arranged for inspection according to workplace procedures, and safety and environmental requirements 3.4 Exhaust and cooling system components are inspected, measured and compared with manufacturer specifications 3.5 Final repair recommendations are made and reported according to workplace procedures
4. Repair and reassemble exhaust and cooling system	4.1 Repair information is sourced and interpreted 4.2 Repair options are analysed and those most appropriate to the circumstances are selected 4.3 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 4.4 Exhaust and cooling system is reassembled according to manufacturer specifications, workplace procedures and safety requirements 4.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair

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Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vessel is presented ready for use or stored according to workplace procedures 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking marine cooling system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure exhaust and cooling system components and use basic mathematical operations, including addition, subtraction, multiplication and division to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as infra-red

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Skills	Description
	thermometers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • lifting and supporting exhaust and cooling system components • working with hot exhaust and cooling system components.
Environmental requirements must include:	• procedures for trapping, storing and disposing of materials released from exhaust systems.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTC001 Diagnose and repair marine exhaust and cooling systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in the fresh water cooling exhaust and cooling systems of two different vessels
- diagnose and repair a fault in the raw water exhaust and cooling systems of two different vessels.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing marine exhaust and cooling systems, including procedures for:
  - lifting and supporting exhaust and cooling system components
  - working with hot exhaust and cooling system components
- environmental requirements, including procedures for trapping, storing and disposing of materials released from exhaust systems
- application, purpose and operation of marine exhaust and cooling systems and components, including:
  - fresh water cooling systems, including:
    - circulation pumps
    - thermostats
    - heat exchangers
    - exhaust manifolds
    - turbochargers

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    - dry exhausts
  - raw water cooling systems, including:
    - pumps, including camshaft, belt, shaft and gear driven
    - relief valves
    - engine oil coolers
    - transmission oil coolers
    - sacrificial anodes
    - intercoolers
    - seawater strainers
    - exhaust manifolds
    - exhaust elbows and risers
    - exhaust tubes and hoses
    - wet exhausts
    - mufflers and waterlocks
    - siphon breaks
    - exhaust outlet flappers
- diagnostic testing procedures for exhaust and cooling systems, including:
  - manometer measurement
  - turbocharger boost measurement
  - raw water system pressure and flow measurement
  - fresh water cooling system pressure testing
  - infra-red temperature measurement
- dismantling and repair procedures for exhaust and cooling systems, including procedures for inspecting and evaluating the following components:
  - circulation pumps
  - thermostats
  - heat exchangers
  - turbochargers and intercoolers
  - raw water pumps, including camshaft, belt, shaft and gear driven
  - relief valves
  - sacrificial anodes
  - seawater strainers
  - exhaust manifolds
  - exhaust elbows and risers
  - exhaust tubes and hoses
  - mufflers and waterlocks
  - siphon breaks
  - exhaust outlet flappers
- post-repair testing procedures for exhaust and cooling systems, including water testing procedures while under load.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine exhaust and cooling systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer exhaust and cooling system specifications
- two different marine vessels with faults in their fresh water cooling exhaust and cooling systems
- two different marine vessels with faults in their raw water exhaust and cooling systems
- diagnostic equipment for marine exhaust and cooling systems
- tools, equipment and materials appropriate for dismantling, testing, repairing and reassembling marine exhaust and cooling systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTE001 Carry out wet run tests on vessel outboard engines

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out wet run tests on vessel outboard engines. It involves preparing for the task, checking the engine, setting up testing equipment, running the engine, conducting the tests, recording test results, and completing work processes and documentation.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Engines

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to wet run an outboard engine	1.1 Job requirements are determined from workplace instructions 1.2 Test procedures and information are accessed and interpreted and

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	appropriate test method is selected 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and test equipment are selected and checked and wet run test area is prepared according to workplace procedures
2. Set up engine and equipment for wet run test	2.1 Engine is checked for ability to run through testing operating range according to manufacturer specifications and workplace procedures 2.2 Engine is prepared and wet run equipment mounted according to manufacturer specifications and workplace procedures 2.3 Required testing equipment is attached to engine according to manufacturer specifications and workplace procedures
3. Carry out wet run test	3.1 Engine is started and operated throughout test operating range according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 3.2 Engine test results are monitored during wet run test according to manufacturer specifications and workplace procedures 3.3 ***Wet run test results*** are recorded according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and engine is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	**Description**
Learning skills to:	• locate outboard engine wet run testing specifications and other required information.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking engine specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting test findings, making recommendations, and recording parts and materials used.
Oral communication skills to:	• clarify workplace instructions and determine job requirements.
Planning and organising skills to:	• identify risk factors to minimise risk to self and others.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting and supporting outboard engines
	  • working with outboard engines, including:
	  • rotating components
	  • propellers
	  • exhaust emissions
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from engines during wet run testing.

Wet run test results must include:	• attaching flushing device • checking security of fittings • connecting remote water supply • regulating water supply for test.

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Unit Mapping Information

Equivalent to AURRTE1001 Prepare outboard engines for wet-run testing

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTE001 Carry out wet run tests on vessel outboard engines

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out wet run testing on two outboard engines, including one outboard engine fitted to a boat.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to wet run testing vessel outboard engines, including procedures for:
  - lifting and supporting outboard engines
  - working with outboard engines, including:
    - rotating components
    - propellers
    - exhaust emissions
    - abnormal noise
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from engines during wet run testing
- types and classifications of outboard engines, including two- and four-stroke engines
- wet running procedures for outboard engines, including:
  - using test tanks
  - using outboard engine flushers
  - checking throttle, choke and fast idle settings
- testing procedures for wet running outboard engines, including attaching tachometers to engines.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vessel outboard engines that they have wet run tested, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer outboard engine specifications
- two different marine outboard engines, including one engine fitted to a boat
- wet run testing equipment for outboard engines
- tools, equipment and materials appropriate for carrying out wet run tests on vessel outboard engines.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTE002 Inspect and service marine outboard engines

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service marine outboard engines and components. It involves preparing for the task, inspecting the vessel engine and its associated components, reporting the inspection findings, servicing and adjusting the engine, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry and includes spark ignition and compression ignition outboard engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Engines

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
service outboard engine and components	1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect engine and components	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service engine and components	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements,*** and without causing damage to components or systems 3.2 ***Post-service testing*** is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and engine is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature

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Skills	Description
	when seeking service procedures and specifications relating to outboard engines.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate liquid volumes and service schedule intervals.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with working with:
	  • exhaust fumes
	  • high energy ignition systems
	  • rotating components.

Environmental requirements must include:	• procedures for trapping, storing and disposing of fluids released from engines.
Post-service testing must include:	• running engine to operating temperature and checking cooling system operation • checking engine fluid levels • checking fuel system for leaks • checking for abnormal noises • checking operation of gauges and warning devices.

Unit Mapping Information

Equivalent to AURRTE2002 Service outboard engines and components

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Links

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Assessment Requirements for AURRTE002 Inspect and service marine outboard engines

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the following outboard engines:
  - two-stroke spark ignition engine
  - direct injection two-stroke spark ignition engine
  - four-stroke spark ignition engine.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing outboard engines, including procedures for identifying hazards and controlling risks associated with working with:
  - exhaust fumes
  - high energy ignition systems
  - rotating components
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from engines
- identification and function of major engine components, including:
  - cylinder block and head
  - piston and connecting rod
  - crankshaft
  - camshaft and valves
  - manifolds
  - ports and reed valves

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- identification and function of engine systems, including:
  - lubrication
  - cooling system
  - fuel system
- operating principles of spark ignition engines, including:
  - two-stroke engines
  - four-stroke engines
- types and applications of:
  - engine configurations
  - engine oils and filters
- inspection procedures for outboard engines, including:
  - oil and fluid leaks
  - ancillary components, including:
    - mountings
    - belts, pulleys and hoses
- service and adjustment procedures for outboard engines, including:
  - adjusting or replacing engine components
  - replacing oil
  - replacing filters
- post-service testing procedures for outboard engines, including procedures for:
  - running engine to operating temperature and checking cooling system operation
  - checking engine fluid levels
  - checking fuel system for leaks
  - checking for abnormal noises
  - checking operation of gauges and warning devices.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine outboard engines that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer outboard engine specifications
- three different outboard engines specified in the performance evidence and requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing marine outboard engines.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTE003 Inspect and service marine inboard engines

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service marine inboard engines and components. It involves preparing for the task, inspecting the engine and associated components of the vessel, reporting the inspection findings, servicing and adjusting the engine, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry and includes spark ignition and compression ignition inboard engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication

Competency Field

Marine

Unit Sector

Technical - Engines

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
service inboard engine and components	1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect engine and components	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service engine and components	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.2 ***Post-service testing*** is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and engine is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature

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Skills	Description
	when seeking service procedures and specifications relating to inboard engines.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate liquid volumes and service schedule intervals.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with working with:
	  • rotating components
	  • hot components
	  • engine oils and coolants
	  • exhaust fumes
	  • high-energy ignition and charging systems.

Environmental requirements must include:	• procedures for trapping, storing and disposing of fluids released from engines.
Post-service testing must include:	• running engine to operating temperature and checking cooling system operation • checking engine fluid and coolant levels • checking fuel system for leaks • checking for abnormal noises • checking operation of gauges and warning devices.

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Unit Mapping Information

Equivalent to AURRTE2003 Service inboard engines and components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTE003 Inspect and service marine inboard engines

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service two different inboard engines, including one of the following:
  - four-stroke spark ignition inboard engine
  - four-stroke compression ignition inboard engine.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing inboard engines, including procedures for identifying hazards and controlling risks associated with working with:
  - rotating components
  - hot components
  - engine oils and coolants
  - exhaust fumes
  - high-energy ignition and charging systems
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from engines
- identification and function of major engine components, including:
  - cylinder block and head
  - piston and connecting rod
  - crankshaft
  - camshaft and valves
  - manifolds

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- identification and function of engine systems, including:
  - lubrication
  - cooling system
  - fuel system
- operating principles of inboard engines, including:
  - four-stroke spark ignition engines
  - four-stroke compression ignition engines
- types and applications of:
  - engine configurations
  - engine oils and filters
- inspection procedures for inboard engines, including:
  - oil and fluid leaks
  - ancillary components, including:
    - mountings
    - belts, pulleys and hoses
- service and adjustment procedures for inboard engines, including:
  - adjusting or replacing engine components
  - replacing oil
  - replacing filters
- post-service testing procedures for inboard engines, including procedures for:
  - running engine to operating temperature and checking cooling system operation
  - checking engine fluid and coolant levels
  - checking fuel system for leaks
  - checking for abnormal noises
  - checking operation of gauges and warning devices.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine inboard engines that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer inboard engine specifications
- two different inboard engines specified in the performance evidence and requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing marine inboard engines.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTE008 Install marine engines, controls and instruments

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install marine engines, controls and instruments. It involves preparing for the task, installing and testing the operation of marine engines, controls and instruments, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Engines

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install engine, controls and instruments	1.1 Job requirements are determined from workplace instructions 1.2 Installation procedures and information are sourced and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Installation options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Install engine	2.1 Engine, controls and instruments are checked for correct application and any damage 2.2 Engine assembly is installed according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to components or systems 2.3 Installed engine is tested for correct operation and required adjustments are made according to manufacturer specifications, workplace procedures and safety requirements
3. Install engine controls	3.1 Engine controls are installed according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.2 Installed controls are tested for correct operation and required adjustments are made according to manufacturer specifications, workplace procedures and safety requirements
4. Install engine instruments and commission engine, controls and instruments	4.1 Engine instruments are installed according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 4.2 Installed engine instruments are tested for correct operation and required adjustments are made according to manufacturer specifications, workplace procedures and safety requirements 4.3 Final adjustments are made and engine, controls and instruments are re-tested in normal operating conditions
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vessel is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting work performed and recording parts and material used.
Oral communication skills to:	• clarify instructions • report findings and make installation recommendations.
Numeracy skills to:	• measure components and use basic mathematical operations, including addition, subtraction, multiplication and division to calculate distances, areas, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• determine installation methods for different vessels.
Technology skills to:	• use measuring equipment, such as rulers, vernier calipers, test lights and multimeters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including lifting and supporting procedures for marine engines • environmental requirements, including procedures for trapping, storing and disposing of fluids released from engines.

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Unit Mapping Information

Equivalent to AURRTE3008 Install marine engines, controls and instruments

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTE008 Install marine engines, controls and instruments

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- install and test prior to placing in service:
  - three different marine engines
  - the marine engine controls of the above engines
  - the marine instruments of the above engines.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing marine engines, controls and instrumentation, including lifting and supporting procedures for marine engines
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from engines
- construction and operating principles of inboard and outboard engines, controls and instruments
- procedures for installing inboard engines, controls and instruments into vessels, including:
  - assessing engine bed dimensions, strength and material to suit engine size and power
  - measuring engine position and determining propeller or input shaft alignment
  - evaluating transom to ensure it suits engine manufacturer requirements, including:
    - measuring transom thickness, parallelism, angle and surface flatness
    - assessing transom condition
  - cutting and sealing transom cut-out to suit stern drive application
  - sealing transom plate to transom

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  - positioning, aligning and fastening front engine mounts
  - lifting, supporting and manoeuvring engine
  - checking and adjusting final alignment of engine
- procedures for installing outboard engine, controls and instruments to vessels, including:
  - ensuring engine meets vessel specifications
  - determining engine position according to centre line and height
  - sealing transoms
- procedures for testing the installation of inboard and outboard engines, controls and instruments in vessels, including checking for water leaks, fuel and oil leaks
- commissioning procedures for inboard and outboard engines, controls and instruments, including testing vessels under normal operating conditions.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engines, controls and instruments that they have installed in vessels, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer engine, controls and instrument specifications
- three different vessels requiring installation of engines, controls and instruments
- tools, equipment and materials appropriate for installing marine engines, controls and instruments.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTE010 Test marine engines in water tanks

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to performance test a marine engine in a water tank. It involves preparing for the task, setting up the test equipment, performance testing the engine, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Engines

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to water test marine engine	1.1 Job requirements are determined from workplace instructions 1.2 Testing information is accessed and interpreted, and testing options appropriate to the circumstances are selected

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Work area is set up according to job and workplace requirements 1.4 Hazards associated with the work are identified and risks are managed 1.5 Testing tools and equipment are selected and checked for serviceability
2. Set up engine and testing equipment	2.1 Engine is prepared for testing according to workplace procedures and ***safety and environmental requirements*** 2.2 Engine is set in testing area according to manufacturer specifications, workplace procedures and safety requirements 2.3 Testing equipment is attached to engine according to manufacturer specifications and workplace procedures
3. Performance test engine	3.1 Engine is started and operated through speed range according to manufacturer specifications, workplace procedures and safety requirements 3.2 Performance data is recorded during engine test sequence according to workplace procedures 3.3 Engine performance data is compared with manufacturer specifications, and discrepancies are noted 3.4 Testing equipment is removed from engine, and engine is removed from test area, according to manufacturer and workplace procedures and safety requirements 3.5 Test report is prepared and recommendations are made for repairs or modifications according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and engine is presented ready for use or stored according to workplace procedures 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking marine engine's specifications and procedures.
Writing skills to:	• legibly and accurately fill out engine performance report documentation when reporting findings and recording parts and material used.
Oral communication skills to:	• clarify instructions and report findings.
Numeracy skills to:	• interpret numbers on gauges and test instruments • use basic mathematical operations, including addition and subtraction, to calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• determine most appropriate method of placing engine in test tank • determine most appropriate testing equipment to gather data to required accuracy.
Technology skills to:	• use gauges and test instruments, such as oil pressure gauges, fuel pressure and flow gauges, tachometers and temperature probes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting and supporting marine engines
	  • working with rotating engine components
	  • placing marine engines in test tanks
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from marine engines during water testing.

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Unit Mapping Information

Equivalent to AURRTE3010 Water test engines in tanks

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTE010 Test marine engines in water tanks

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- water test two different marine engines in tanks, including one outboard engine.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to testing marine engines in water tanks, including procedures for:
  - lifting and supporting marine engines
  - working with rotating engine components
  - placing marine engines in test tanks
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from marine engines during water testing
- application, purpose and operation of water testing tanks, including:
  - methods of mounting engines to test tank
  - engine test propellers
- application, purpose and operation of marine engine test equipment, including:
  - oil pressure gauges
  - fuel pressure and flow gauges
  - tachometers
  - temperature probes
- procedures for performance testing marine engines in water tanks, including load testing
- procedures for compiling engine performance reports.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vessels or engines that they have tested in water tanks, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- water tank for testing marine engines
- two different marine engines requiring water testing in tanks
- marine engine test equipment as specified in the knowledge evidence
- tools, equipment and materials appropriate for water testing marine engines in tanks.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTE011 Overhaul two and four-stroke cycle marine outboard engines

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return marine outboard engines to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the engine, carrying out the overhaul procedures, reassembling and testing the engine, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry. The marine outboard engines include two and four-stroke spark ignition engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Engines

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle engine	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate engine and components	2.1 Engine and relevant components are dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble engine and components	4.1 Engine is assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and adjustments are made as required 4.3 Assembly of engine is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace procedures, and safety and environmental requirements, and any problems detected as having been introduced during the assembly

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and engine is presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for engines efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking engine specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure engine components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as micrometers and dial bore gauges

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Skills	Description

	• use specialised engine overhaul equipment, such as:
	  • hones
	  • valve and valve seat cutting machinery.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • operating specialised engine overhaul tools, equipment and machinery
	  • using chemicals and toxic substances
	  • operating manual and mechanical lifting equipment
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from engines.

Unit Mapping Information

Equivalent to AURRTE4011 Overhaul two and four cycle outboard engines

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTE011 Overhaul two and four-stroke cycle marine outboard engines

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul three different marine outboard engines, including:
  - one two-stroke outboard engine
  - one four-stroke outboard engine.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling outboard engines and associated engine components, including procedures for:
  - operating specialised engine overhaul tools, equipment and machinery, including:
    - heating torches, ovens and presses
    - handling freezing substances, including liquid nitrogen
  - using chemicals and toxic substances
  - operating manual and mechanical lifting equipment
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from engines
- types, characteristics and operating principles of outboard engines and associated engine components
- outboard engine overhaul procedures, including:
  - methods for cleaning and preparing engine for overhaul
  - engine dismantling procedures

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- engine and engine component inspection, measuring and evaluation procedures, including:
  - non-destructive testing (NDT) procedures, including dye penetrant testing and magnetic particle testing
  - methods for measuring and calculating tolerances and clearances
- engine and engine component repair and adjustment procedures, including:
  - engine cylinder head and block machining
  - engine crankshaft and camshaft grinding
  - engine cylinder and engine sleeve fitting, boring and honing
  - engine bearing tunnel and connecting rod repair
  - engine component heat treating, straightening and reclamation
  - engine component balancing
- engine assembly and adjustment procedures for achieving component tolerances, including:
  - piston to connecting rod big-end alignment
  - big-end bearing to crankshaft journal clearance
  - big-end bearing crush with bearing blue
  - piston ring end gap, back clearance and side clearance
  - main bearing to crankshaft journal clearance
  - main bearing crush with bearing blue
  - semi-flanged thrust bearings to crankshaft clearance
  - finished camshaft bearings to camshaft clearance
  - camshafts and cam followers
  - camshaft end float
  - crankshaft end float
  - gear backlash
  - oil pump sealing and pick-up oil piping
- component assembly procedures and processes, including:
  - welsh plugs and oil gallery plugs
  - piston and connecting rod assemblies
  - big-end bearings
  - piston rings to pistons
  - main bearings and thrust washers
  - semi-flanged thrust bearings
  - crankshafts, including protection measures for crankshaft journals, bearings, rings and bores
  - finished camshaft bearings
  - camshafts and cam followers
  - timing gears
  - chains and tensioners

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    - oil pumps, oil squirters, and oil pump pick-ups
    - balance shafts
    - fitting ancillary components, including seals, crankshaft pulleys and flywheels
- post-overhaul testing procedures for outboard engines.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine outboard engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer outboard engine specifications
- three different marine outboard engines requiring overhaul, including one two-stroke engine and one four-stroke engine
- tools, equipment and materials appropriate for overhauling and adjusting marine outboard engines.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTE012 Analyse and evaluate faults in light marine engine and powerhead systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in light marine engine and power head systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the marine service and repair industry on inboard or outboard marine vessels.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Engines

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for light marine engine and powerhead system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Engine and power head system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to light marine engine and power head systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised light marine engine and power head diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting and supporting engines
	  • running engines, including working with:
	  • exhaust fumes
	  • rotating shafts
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from engine and power head systems.

Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURRTE5012 Analyse and evaluate light marine engine and powerhead system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTE012 Analyse and evaluate faults in light marine engine and powerhead systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the engine and power head systems of three different light marine vessels, including:
  - a fault in one inboard engine system
  - a fault in one outboard engine system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in light marine engine and power head systems, including procedures for:
  - lifting and supporting engines
  - running engines, including working with:
    - exhaust fumes
    - rotating shafts
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from engine and power head systems
- principles and processes involved in planning and implementing analysis and evaluation of engine and power head systems
- design and planning of diagnostic procedures of light marine engine and powerhead systems
- design, manufacture, operation and limitations of light marine engine and power head systems and components, including:

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  - two-stroke and four-stroke petrol engines
  - diesel engines
- vessel systems and their impact on engine operation, including:
  - ignition systems
  - intake and exhaust systems
  - lubrication systems
  - cooling systems
  - engine mounting systems
- testing procedures for light marine engine and powerhead systems, including:
  - non-destructive testing (NDT)
  - engine performance and maximum speed
  - full load water testing
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in light marine engine and power head systems
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to light marine engine and power head systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light marine engine and power head systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer engine and power head system specifications
- three different light marine vessels with faults in the light marine engine and power head systems specified in the performance evidence

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- diagnostic equipment for light marine engine and power head systems
- tools, equipment and materials appropriate for analysing and evaluating light marine engine and power head systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTF001 Diagnose and repair petrol and diesel marine fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in marine fuel systems. It involves preparing for the task, recognising and managing safety hazards, selecting the correct diagnostic procedure, carrying out the diagnosis and repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry. Marine fuel systems include those found in both inboard and outboard engines, and diesel and petrol vessels. The unit does not apply to diagnosis and repair of LNG and CNG fuel systems.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical – Fuel Systems

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair marine fuel system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.4 Diagnostic tools and equipment are selected and checked for serviceability
2. Identify hazards and understand safety requirements	2.1 ***Safety risks*** applicable to the vessel type are identified and managed 2.2 Methods to assess presence of fumes are undertaken and ventilation requirements are applied 2.3 Hazards and work health and safety standards associated with the work are identified and risks are managed
3. Diagnose marine fuel system	3.1 Diagnostic tests are carried out according to workplace procedures, and ***safety and environmental requirements*** 3.2 Faults are identified from diagnostic test results and causes of faults are determined 3.3 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
4. Repair marine fuel system	4.1 Hazards associated with undertaking the repair are assessed and managed before beginning work 4.2 Repair options are analysed and those most appropriate to the circumstances are selected 4.3 Repair tools, equipment and materials are selected and checked 4.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or system 4.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace standards and system or vessel is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking marine fuel system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure marine fuel system components and use basic mathematical operations, including addition, subtraction, multiplication and division and subtraction, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use equipment, including fume and vapour detector and bilge blower.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with flammable diesel and petrol fuels • environmental requirements, including procedures for trapping, storing and disposing of fluids and vapours released from fuel systems.
Safety risks must include:	• differing fuel types, including: • petrol

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	• diesel
	• varying motor type, including:
	  • inboard
	  • outboard

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
AURRTF001 Diagnose and repair petrol and diesel marine fuel systems (Release 1)	N/A	New unit	No equivalent unit

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTF001 Diagnose and repair petrol and diesel marine fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

diagnose and repair a fault in three marine fuel systems fitted to different vessels. This must include at least one petrol fuel system and one diesel petrol fuel system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing marine fuel systems, including procedures for working with flammable fuels
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from fuel systems
- diagnostic testing procedures for marine fuel systems, including:
    - fuel pump pressure, volume and vacuum testing
    - air and fuel leak testing
    - exhaust gas analysis
- repair procedures for marine fuel systems
- post-repair testing procedures for marine fuel systems.
- knowledge of how to identify, capture and remove fumes, including:
    - understanding of ventilation requirements
    - use of bilge blower
    - use of fume and vapour detectors
- hazards associated with confined spaces
- potential sources and causes of ignition
-

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the carburettors that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer marine fuel system specifications
- three different vessels or engines with faults in the fuel systems
- diagnostic equipment for marine fuel systems
- tools, equipment and materials appropriate for maintenance and repair of marine fuel systems.
-

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTQ001 Inspect and service marine inboard propeller drive systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service inboard propeller drive systems on vessels. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
service inboard propeller drive system	1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect propeller drive system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service propeller drive system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety requirements, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vessel is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature

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Skills	Description
	when seeking service procedures and specifications relating to inboard propeller drive systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• measure components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with working with rotating shafts and component sharp edges.

Unit Mapping Information

Equivalent to AURRTQ2001 Service inboard propeller drive systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTQ001 Inspect and service marine inboard propeller drive systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service three different vessels with inboard propeller drive systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing inboard propeller drive systems, including procedures for identifying hazards and controlling risks associated with working with rotating shafts and component sharp edges
- identification and function of inboard propeller drive system components, including:
  - stern tube
  - propeller shaft and coupling
  - 'A' frame strut
  - 'I' strut
  - cutlass bearing
  - stern tube bearings
- basic operation of inboard propeller drive systems
- types and applications of lubricants and lubricating fluids for inboard propeller drive systems
- inspection procedures for inboard propeller drive systems, including procedures for checking clearances
- service and adjustment procedures for inboard propeller drive systems, including:
  - adjusting or replacing components

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  - greasing components
- post-service testing procedures for inboard propeller drive systems, including procedures for:
  - checking alignment
  - checking for abnormal noises.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine inboard propeller drive systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer inboard propeller drive system specifications
- three different vessels with inboard propeller drive systems requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing marine inboard propeller drive systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTQ002 Inspect and service marine jet drive propulsion systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service jet drive propulsion systems on vessels. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
service jet drive propulsion system	1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect propulsion system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service propulsion system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vessel is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to jet drive propulsion systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate liquid volumes and service schedule intervals.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with working with:
	  • exhaust fumes
	  • rotating components
	  • moving components that have the ability to crush
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from propulsion systems.

Unit Mapping Information

Equivalent to AURRTQ2002 Service jet drive propulsion systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTQ002 Inspect and service marine jet drive propulsion systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service two different vessels with jet drive propulsion systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing jet drive propulsion systems, including procedures for identifying hazards and controlling risks associated with working with:
  - exhaust fumes
  - rotating components
  - moving components that have the ability to crush
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from propulsion systems
- identification and function of jet drive propulsion system components, including:
  - centrifugal
  - axial flow
- basic operation of jet drive propulsion systems
- types and applications of lubricants and lubricating fluids for jet drive propulsion systems
- inspection procedures for jet drive propulsion systems, including:
  - oil and fluid leaks
  - ancillary components, including:
    - mountings
    - belts, pulleys and hoses

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- service and adjustment procedures for jet drive propulsion systems, including:
  - main bearing lubrication
  - power hydraulic system
  - driveline
  - screens and pick-ups
  - steering system
  - control system with forward, neutral and reverse
- post-service testing procedures for jet drive propulsion systems, including procedures for:
  - running engine to operating temperature and checking cooling system operation
  - checking engine fluid levels
  - checking fuel system for leaks
  - checking for abnormal noises
  - checking gauges and warning devices for operation.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine jet drive propulsion systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer jet drive propulsion system specifications
- two different vessels with jet drive propulsion systems requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing marine jet drive propulsion systems.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTQ005 Install marine jet drive propulsion systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install marine jet drive propulsion systems. It involves preparing for the task, installing jet drive propulsion systems and testing their operation, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install jet drive propulsion system	1.1 Job requirements are determined from workplace instructions 1.2 Installation procedures and information are sourced and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Installation options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Install and commission system	2.1 System is checked for correct application and components are checked for damage 2.2 System is installed according to manufacturer specifications, workplace procedures and ***safety requirements***, and without causing damage to components or systems 2.3 Installed system is tested for correct operation and required adjustments are made according to manufacturer specifications, workplace procedures and safety requirements 2.4 System is re-tested in normal operating conditions and final adjustments are made
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vessel is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking jet drive propulsion system specifications and procedures.

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Skills	Description
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting work performed and recording parts and material used.
Oral communication skills to:	• clarify instructions • report findings and make installation recommendations.
Numeracy skills to:	• measure jet drive propulsion system components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• determine installation methods for different vessels.
Technology skill to:	• use precision measuring equipment, such as rulers, vernier calipers, micrometers and dial gauge indicators.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including lifting and supporting procedures for jet drive propulsion systems.

Unit Mapping Information

Equivalent to AURRTQ3005 Install jet drive propulsion systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTQ005 Install marine jet drive propulsion systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- install and test prior to placing in service two different marine jet drive propulsion systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing jet drive propulsion systems, including lifting and supporting procedures for jet drive propulsion systems
- construction and operating principles of jet drive propulsion systems, including:
  - types of jet pumps, including:
    - centrifugal
    - axial flow
  - methods of reversing thrust, including:
    - cable-operated buckets
    - hydraulically-operated buckets
    - electrically-operated buckets
  - gearboxes
- procedures for installing marine jet drive propulsion systems in vessels
- procedures for testing the installation of marine jet drive propulsion systems
- commissioning procedures for marine jet drive propulsion systems.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the jet drive propulsion systems they have installed in vessels, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- workplace location or simulated workplace
- workplace instructions
- manufacturer jet drive propulsion system specifications
- two different vessels requiring installation of jet drive propulsion systems
- tools, equipment and materials appropriate for installing marine jet drive propulsion systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTR001 Inspect, service and maintain marine battery storage systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes to inspect, service and maintain marine battery storage systems. It involves preparing for the task, inspecting the battery storage system, servicing the system, and completing workplace processes and documentation, including any associated recommendations for further action.

It applies to those working in the marine service and repair industry. The battery storage systems include those in recreational boating equipment or marine applications.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service marine battery storage system	1.1 Job requirements are determined from workplace instructions 1.2 Inspection and servicing procedures and information are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for required repairs or adjustments
3. Service and maintain system	3.1 ***Service and maintenance procedures*** are carried out according to manufacturer specifications, and safety and ***environmental requirements***, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures, and safety and environmental requirements
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and battery storage system is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to battery storage systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings.
Numeracy skills to:	• match battery types and identification numbers to specifications.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
	  • working with high current electrical systems
	  • manually handling batteries and toxic and corrosive substances
	  • checking and dealing with flammable gas build-up in boats prior to starting electrical system work.

Service and maintenance procedures must include:	• inspecting battery, terminals and leads • inspecting battery securing system • inspecting and cleaning battery and battery storage compartment • topping battery fluid as required.
Environmental requirements must include:	• procedures for trapping, storing and disposing of cleaning fluids used during service and maintenance process.

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Unit Mapping Information

Equivalent to AURRTR1001 Inspect, service and maintain marine battery storage systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTR001 Inspect, service and maintain marine battery storage systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, service and maintain the marine battery storage systems of two different vessels.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, servicing and maintaining marine battery storage systems, including procedures for:
  - selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
  - working with high current electrical systems
  - manually handling batteries and toxic and corrosive substances
  - checking and dealing with flammable gas build-up in boats prior to starting electrical system work
  - environmental requirements, including procedures for trapping, storing and disposing of cleaning fluids used during service and maintenance process
- identification and function of marine battery storage system components, including:
  - base, cover and box
  - battery hold-down systems
  - ventilation and cooling systems
  - battery switching devices
- inspection procedures for marine battery storage systems, including inspecting:
  - battery, terminals and leads

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  - battery securing systems
  - battery storage compartments
- service and maintenance procedures for marine battery storage systems, including:
  - cleaning batteries, battery terminals and posts, and battery storage compartments
  - topping up battery fluid.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine battery storage systems that they have inspected, serviced and maintained, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- workplace location or simulated workplace
- workplace instructions
- manufacturer battery storage system specifications
- two different vessels with marine battery storage systems requiring service and maintenance
- PPE, including clothing, and eye and hand protection
- tools, equipment and materials appropriate for inspecting, servicing and maintaining marine battery storage systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTR006 Diagnose and repair marine electrical systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the low-voltage electrical systems of marine vessels, such as dash instrumentation, switch and fuse panels, bilge pumps and lighting, global positioning systems (GPS), depth sounders, fish finders, communications equipment and radars.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose marine electrical system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose electrical system	2.1 Diagnostic tests are carried out according to workplace procedures and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair electrical system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vessel is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking marine electrical system specifications and procedures • interpret wiring diagrams.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate current flow, resistance and voltage • interpret numbers on electrical measuring equipment and calculate deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use electrical measuring equipment, such as multimeters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • checking and dealing with flammable gas build-up in boats prior to starting electrical system work
	  • working with potentially high-current electrical systems.

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Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTR006 Diagnose and repair marine electrical systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in the following marine electrical systems and components:
  - dash instrumentation
  - switch and fuse panels
  - bilge pump system
  - lighting system
  - depth sounder or fish finder
  - global positioning system (GPS)
  - marine radio.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing marine electrical systems and components, including procedures for:
  - checking and dealing with flammable gas build-up in boats, including LPG and hydrogen, prior to starting electrical system work
  - working with potentially high-current electrical systems
- operating principles of electrical system circuits and associated components, including:
  - Ohm's law
  - electromagnetic interference
- application, purpose and operation of marine electrical systems and components, including:

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  - marine vessel lighting systems, including marine regulations for vessel lighting
  - dash instrumentation
  - switch and fuse panels
  - bilge pump systems
  - depth sounders and fish finders
  - GPS
  - marine radios
  - 12 volt marine accessories, including winches
  - autopilot and radar
  - marine battery charge management systems
  - networked communication topographies
- diagnostic testing procedures for marine electrical systems and components, including:
  - testing for circuit resistance, voltage drop and current draw
  - testing for open and short circuits
  - testing for shorts to power circuits and grounds
  - inspecting for component moisture ingress and connector damage
  - testing marine battery charge management systems
  - testing networked communication topographies
- repair procedures for marine electrical systems and components, including procedures for:
  - selecting wiring gauge
  - soldering wiring
  - insulating wiring
  - crimping terminals
  - removing and replacing connectors
  - repairing networked communication topographies
- post-repair testing procedures for marine electrical systems and components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine electrical systems that they have worked on, e.g. repair orders.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer electrical system specifications
- marine vessel with faults in the electrical systems and components specified in the performance evidence
- diagnostic equipment for marine vessel electrical systems
- tools, equipment and materials appropriate for repairing marine vessel electrical systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTR007 Install marine electrical systems and components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install low voltage marine electrical systems and components, such as dash instrumentation, switch and fuse panels, bilge pumps, lighting, global positioning systems (GPS), depth sounders, fish finders, communications equipment and radars. It involves preparing for the task, installing and testing the operation of the electrical systems and components, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install marine electrical system and components	1.1 Job requirements are determined from workplace instructions 1.2 Installation procedures and information are sourced and interpreted 1.3 Installation options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked according for serviceability
2. Install and commission electrical system and components	2.1 System is checked for correct application and components are checked for damage 2.2 System and components are installed according to manufacturer specifications, workplace procedures and ***safety requirements***, and without causing damage to components or systems 2.3 Installed system and components are tested for correct operation and required adjustments are made according to manufacturer specifications, workplace procedures and safety requirements 2.4 Final adjustments are made and marine electrical systems and components are re-tested in normal operating conditions
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vessel is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting work performed and recording parts and material used.
Oral communication skills to:	• clarify instructions • report findings and make installation recommendations.
Numeracy skills to:	• measure components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• determine most appropriate electrical system and component installation positions on the vessel.
Technology skills to:	• use measuring equipment, such as rulers, vernier calipers, test lights and multimeters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • checking and dealing with flammable gas build-up in boats, including liquefied petroleum gas (LPG) and hydrogen, prior to starting electrical system work
	  • working safely with potentially high current electrical systems.

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Unit Mapping Information

Equivalent to AURRTR3002 Install marine electronic systems and components and AURRTR3004 Install marine electrical systems and components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTR007 Install marine electrical systems and components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- install the following marine electrical components on two different vessels:
  - switch and fuse panels
  - bilge pump
  - lighting
  - depth sounder or fish finder
  - global positioning system (GPS).

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing marine electrical systems and components, including procedures for:
  - checking and dealing with flammable gas build-up in boats, including liquefied petroleum gas (LPG) and hydrogen, prior to starting electrical system work
  - working safely with potentially high current electrical systems
- construction and operating principles of marine electrical systems and components, including:
  - dash instrumentation
  - switch and fuse panels
  - bilge pumps
  - lighting
  - depth sounders and fish finders

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  - GPS
  - marine radios
  - marine battery charge management systems
- procedures for selecting, installing and testing marine electrical systems and components in vessels, including:
  - dash instrumentation
  - switch and fuse panels
  - bilge pumps
  - lighting, including marine safety regulations for vessel lighting
  - depth sounders and fish finders
  - GPS
  - marine radios
  - procedures for installing and testing marine electrical systems and components on a bus topography.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine electrical systems and components they have installed in vessels, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- workplace location or simulated workplace
- workplace instructions
- manufacturer electrical system and component specifications
- two different vessels requiring installation of marine electrical systems and components
- the following electrical components:
  - switch and fuse panels
  - bilge pump

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  - lighting
  - depth sounder or fish finder
  - GPS
- tools, equipment and materials appropriate for installing marine electrical systems and components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTX001 Inspect and service marine outboard and stern drive transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service marine outboard and stern drive transmissions. It involves preparing for the task, inspecting the transmission, reporting the inspection findings, servicing and adjusting the transmission, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
service outboard and stern drive transmission	1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect transmission	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service transmission	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and transmission is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature

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Skills	Description
	when seeking service procedures and specifications relating to outboard and stern drive transmissions.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate liquid volumes and service schedule intervals • understand gear ratios in outboard and stern drive transmissions.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with working with rotating components.
Environmental requirements must include:	• procedures for trapping, storing and disposing of fluids released from transmissions.

Unit Mapping Information

Equivalent to AURRTX2001 Service marine outboard and stern drive transmission

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTX001 Inspect and service marine outboard and stern drive transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service two different marine transmissions, including:
  - one outboard transmission
  - one stern drive transmission.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing marine outboard and stern drive transmissions, including procedures for identifying hazards and controlling risks associated with working with rotating components
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmissions
- identification and function of outboard and stern drive transmission components, including:
  - steering
  - trim and tilt
  - gear shift control, including:
    - mechanical
    - electrical
    - electrohydraulic
  - clutch system
  - cooling system

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- types and applications of lubricants and lubricating fluids for outboard and stern drive transmissions
- inspection procedures for outboard and stern drive transmissions, including oil and fluid condition and leaks
- service and adjustment procedures for outboard and stern drive transmissions, including:
  - lubricant replacement
  - trim and tilt
  - steering system
  - screens and pick-ups
  - control system with forward, neutral and reverse
  - cooling system
- post-service testing procedures for outboard and stern drive transmissions.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine outboard and stern drive transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer outboard and stern drive transmission specifications
- two different marine transmissions specified in the performance evidence and requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing marine outboard and stern drive transmissions.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTX002 Inspect and service marine inboard transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service marine inboard transmissions. It involves preparing for the task, inspecting the transmission, reporting the inspection findings, servicing and adjusting the transmission, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service inboard	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
transmission	1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect transmission	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service transmission	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and transmission is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to inboard transmissions.

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Skills	Description
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate liquid volumes and service schedule intervals • understand gear ratios in inboard transmissions.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with working with rotating shafts and pulleys.
Environmental requirements must include:	• procedures for trapping, storing and disposing of fluids released from transmissions.

Unit Mapping Information

Equivalent to AURRTX2002 Service marine inboard transmissions

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTX002 Inspect and service marine inboard transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service two different marine transmissions, including:
  - one inline transmission
  - one 'V' drive transmission.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing marine inboard transmissions, including procedures for identifying hazards and controlling risks associated with working with rotating shafts and pulleys
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmissions
- identification and function of marine inboard transmissions, including:
  - 'V' drive transmissions
  - inline transmissions
  - step-up transmissions
  - hydraulic transmissions
  - mechanical transmissions
  - counter shaft transmissions
  - planetary gear transmissions
  - mechanical dog clutches
- basic operation of marine inboard transmissions, including:

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  - mechanical transmissions
  - hydraulic transmissions
- types and applications of lubricants and lubricating fluids for inboard transmissions
- inspection procedures for marine inboard transmissions, including oil and fluid condition and leaks
- service and adjustment procedures for marine inboard transmissions, including:
  - replenishing lubricants
  - control system with forward, neutral and reverse
  - cooling system
- post-service testing procedures for marine inboard transmissions.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine inboard transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer inboard transmission specifications
- two different vessels with the inboard transmissions specified in the performance evidence and requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing marine inboard transmissions.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTX003 Diagnose and repair marine outboard and stern drive transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the outboard and stern drive transmissions of marine vessels. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
repair transmission	1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose transmission	2.1 Diagnostic tests are carried out according to workplace procedures and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Dismantle transmission	3.1 Tools, equipment and materials are selected and checked 3.2 Transmission is dismantled as required according to workplace procedures and safety and ***environmental requirements*** 3.3 Transmission is cleaned and components arranged for inspection according to workplace procedures and safety and environmental requirements 3.4 Transmission components are measured and compared with manufacturer specifications 3.5 Final repair recommendations are made and reported according to workplace procedures
4. Repair and reassemble transmission	4.1 Repair information is sourced and interpreted 4.2 Repair options are analysed and those most appropriate to the circumstances are selected 4.3 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety and environmental requirements, and without causing damage to components or systems 4.4 Transmission is reassembled according to manufacturer specifications, workplace procedures and safety requirements 4.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vessel or transmission is presented ready for use or stored according to workplace procedures 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking transmission specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure transmission components and use basic mathematical operations, including addition and subtraction, multiplication and division, to calculate distances, areas, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as micrometers and dial gauge indicators.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • working with turning propellers • operating manual and mechanical lifting equipment.
Environmental requirements must include:	• procedures for trapping, storing and disposing of fluids released from transmissions.

Unit Mapping Information

Equivalent to AURRTX3003 Diagnose and repair marine outboard and stern drive transmissions

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTX003 Diagnose and repair marine outboard and stern drive transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in:
  - two different marine outboard transmissions
  - one marine stern drive transmission.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing outboard and stern drive transmissions, including procedures for:
  - working with turning propellers
  - operating manual and mechanical lifting equipment
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmissions
- operating principles of outboard and stern drive transmissions and associated components, including:
  - gear types
  - gear ratios and torque reduction and multiplication
- application, purpose and operation of outboard and stern drive transmissions and components, including:
  - power flows
  - gearshift mechanisms, including:
    - cone clutches

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    - mechanical dog clutches
  - methods of matching propeller to transmission gear ratio, engine output and boat performance
- diagnostic testing procedures for outboard and stern drive transmissions, including procedures for analysing:
  - gear selection problems
  - abnormal system noise
- dismantling procedures for outboard and stern drive transmissions, including procedures for:
  - measuring clearances and tolerances
  - inspecting components
- repair procedures for outboard and stern drive transmissions, including procedures for replacing:
  - gearshift mechanisms
  - bearings and seals, including oil replacement
  - gears
  - propellers
- assembly procedures for outboard and stern drive transmissions, including procedures for:
  - shimming bearings and gears
  - adjusting preload and rolling torque
  - checking gear tooth contact patterns
- post-repair testing procedures for outboard and stern drive transmissions, including procedures for water testing.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the outboard and stern drive transmissions in marine vessels that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer transmission specifications
- two different marine outboard transmissions with faults
- one marine stern drive transmission with faults
- diagnostic equipment for marine outboard and stern drive transmissions
- tools, equipment and materials appropriate for dismantling, repairing, reassembling and adjusting marine outboard and stern drive transmissions.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTX004 Diagnose and repair marine inboard transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the inboard transmissions of marine vessels. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair transmission	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose transmission	2.1 Diagnostic tests are carried out according to workplace procedures and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Dismantle transmission	3.1 Tools, equipment and materials are selected and checked 3.2 Transmission is dismantled as required according to workplace procedures and safety and ***environmental requirements*** 3.3 Transmission is cleaned and components arranged for inspection according to workplace procedures and safety and environmental requirements 3.4 Transmission components are measured and compared with manufacturer specifications 3.5 Final repair recommendations are made and reported according to workplace procedures
4. Repair and reassemble transmission	4.1 Repair information is sourced and interpreted 4.2 Repair options are analysed and those most appropriate to the circumstances are selected 4.3 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety and environmental requirements, and without causing damage to components or systems 4.4 Transmission is reassembled according to manufacturer specifications, workplace procedures and safety requirements 4.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vessel or transmission is presented ready for use or stored according to workplace procedures 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking transmission specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure transmission components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as micrometers and dial gauge indicators.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with inboard propeller drive systems and rotating shafts
	  • working near hot exhaust systems
	  • working in restricted spaces
	  • using manual and mechanical lifting equipment.

Environmental requirements must include:	• procedures for trapping, storing and disposing of fluids released from transmissions.

Unit Mapping Information

Equivalent to AURRTX3004 Diagnose and repair marine inboard transmissions

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTX004 Diagnose and repair marine inboard transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in two different marine inboard transmissions.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing inboard transmissions, including procedures for:
  - working with inboard propeller drive systems and rotating shafts
  - working near hot exhaust systems
  - working in restricted spaces
  - using manual and mechanical lifting equipment
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmissions
- operating principles of inboard transmissions and associated components, including:
  - gear types
  - gear ratios and torque reduction and multiplication
  - simple gear trains
  - compound gear trains
  - lubricant types
- application, purpose and operation of inboard transmissions and components, including:
  - power flows
  - V-drive transmissions

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  - in-line transmissions
  - step-up transmissions
  - hydraulic transmissions
  - counter shaft transmissions
  - planetary gear transmissions
  - mechanical dog clutch transmissions
  - cone clutch transmissions
  - methods of matching propeller to transmission gear ratio, engine output and boat performance
- diagnostic testing procedures for inboard transmissions, including procedures for analysing:
  - gear selection problems
  - drive problems
  - abnormal system noise
- removal procedures for inboard transmissions
- dismantling procedures for inboard transmissions, including procedures for:
  - measuring clearances and tolerances
  - inspecting components
- repair procedures for inboard transmissions, including procedures for replacing:
  - gearshift mechanisms
  - bearing and seals, including oil replacement
  - gears and transmission shafts
- assembly procedures for inboard transmissions, including:
  - shimming bearings and gears
  - adjusting preloads
- installation procedures, including procedures for aligning engines
- post-repair testing procedures for inboard transmissions, including procedures for water testing.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the inboard transmissions in marine vessels that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer transmission specifications
- two different marine inboard transmissions with faults
- diagnostic equipment for marine inboard transmissions
- tools, equipment and materials appropriate for dismantling, repairing, reassembling and adjusting marine inboard transmissions.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURRTX005 Analyse and evaluate faults in light marine transmission systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate light marine transmission system faults in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the marine service and repair industry on inboard, outboard or jet drive transmission systems.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Marine

Unit Sector

Technical - Transmission

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for light marine transmission system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Light marine transmission system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and detailing and justifying rectification method or variation to the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to light marine transmission systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised light marine transmission diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with inboard propeller drive systems and rotating shafts • environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmissions.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURRTX5005 Analyse and evaluate light marine transmission system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURRTX005 Analyse and evaluate faults in light marine transmission systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in the transmission systems of three different light marine vessels
- the above analysis and evaluation must involve two of the following systems:
  - stern drive
  - inboard shaft
  - 'V' drive
  - outboard transmission
  - counter rotating outboard propellers
  - jet drive.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in light marine transmission systems, including procedures for working with inboard propeller drive systems and rotating shafts
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmissions
- principles and processes involved in planning and implementing analysis and evaluation of light marine transmission system faults
- design and planning of diagnostic procedures of light marine transmission systems
- types, functions, operation and limitations of light marine transmission systems, including:

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    - stern drives, inboard shaft and 'V' drives, outboard transmissions, jet drives, and drivelines
    - shift controls
    - counter rotating outboard propellers
- vessel systems and their impact on light marine transmission system operation, including on engine and shaft alignment for inboard and stern drive installations
- testing procedures for light marine transmission systems, including:
    - engine and shaft alignment for inboard and stern drive installations
    - propeller matching
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in light marine transmission systems
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) relating to light marine transmission systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the light marine transmission systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer transmission system specifications
- three different light marine vessels with faults in the transmission systems specified in the performance evidence
- diagnostic equipment for light marine transmission systems
- tools, equipment and materials appropriate for analysing and evaluating light marine transmission systems.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSAA001 Process customer complaints in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to deal with formal and informal complaints and negative feedback from customers. It involves following established process steps to resolve issues and complaints in order to satisfy both internal and external customer complaints.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Sales and Parts, Administration and Management

Unit Sector

Administration

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Clarify nature of	1.1 Details of complaint are established

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
complaint	1.2 Summary of complaint is documented accurately 1.3 Initial explanations about process and apologies appropriate to individual customer's situation are conveyed to customer
2. Identify options to resolve complaint	2.1 Possible options for resolving complaint are identified according to workplace procedures 2.2 Solutions outside individual level of responsibility are referred to supervisor
3. Act to resolve complaint	3.1 Chosen solution is outlined to customer according to workplace procedures 3.2 Chosen solution is implemented within required timeframe and conditions are negotiated with customer 3.3 Complaint is referred to supervisor if resolution is not possible or where additional levels of authorisation are required
4. Provide feedback on complaint resolution process	4.1 Effectiveness of complaint resolution solution is assessed against customer feedback 4.2 Changes required to improve complaint resolution procedures are identified and passed on to supervisor for consideration according to workplace procedures 4.3 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• interpret information in warranties, terms and conditions, and receipts relevant to customer complaint.
Oral communication skills to:	• participate in verbal exchanges using active listening and questioning techniques to gather, clarify and confirm customer information and feedback • effectively relate to people from diverse backgrounds using clear language and tone of voice appropriate to situation.

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Skills	Description
Self-management skills to:	• follow workplace procedures and seek assistance from supervisor as required.
Problem solving skills to:	• apply basic conflict resolution skills for handling dissatisfied customers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURSAA2001 Process customer complaints

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSAA001 Process customer complaints in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate that they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- process and resolve three different customer complaints in an automotive sales and service workplace or simulated environment.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- workplace operations relating to:
  - workplace products and services
  - location of departments, sections and contact details
- workplace procedures relating to:
  - customer service
  - dealing with dissatisfied customers
  - complaints handling and recommending appropriate action
  - reporting and registering complaints
- key legal requirements relating to customer rights as a consumer and business obligations under the Australian Consumer Law (ACL)
- effective communication techniques and the individual's role in processing customer complaints, including:
  - giving customers full attention
  - greeting and farewelling protocols
  - speaking clearly and concisely
  - using appropriate language and non-verbal communication, including:
    - tone of voice

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    - body language
    - personal presentation
  - using clear written information
  - dealing with people from diverse social, cultural and ethnic backgrounds and with varying physical and mental abilities
- basic negotiation and problem-solving techniques, including:
  - active listening
  - questioning techniques
  - interpreting body language
  - presenting options.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to processing customer complaints in an automotive sales and service workplace, e.g. complaint summaries.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following should be made available:

- automotive sales and service workplace or simulated workplace
- workplace procedures relating to customer service and complaints handling
- commercially realistic range of customers with different complaints.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSAA002 Maintain customer aftermarket relations

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to work in a customer service role with a focus on automotive aftermarket sales and service. It involves providing after-market advice and support, establishing and addressing customer needs while maintaining post-sale service relationships, and building long-term relationships with customers.

It applies to those working in the automotive administration or sales industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Sales and Parts, Administration and Management

Unit Sector

Administration

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Establish customer aftermarket needs,	1.1 Customer aftermarket needs are monitored using formal and informal communication channels and networks

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
trends and opportunities	1.2 Aftermarket products and services are assessed to determine if they meet customer needs 1.3 Customer aftermarket trends are documented and reported to appropriate persons for planning and continuous improvement opportunities
2. Update aftermarket customer database	2.1 Customer database and documents are regularly updated and vital data is kept for current and prospective customers 2.2 Customer sales and service history is gathered and entered into database 2.3 Customer data is uploaded, edited and maintained regularly to ensure databases are up-to-date
3. Process customer feedback	3.1 Customer feedback is assessed to determine customer needs 3.2 Customer needs are responded to according to workplace procedures 3.3 Customer is contacted where appropriate to clarify and confirm feedback 3.4 Response to customer is provided to satisfactorily meet their expectations
4. Provide aftermarket service	4.1 Workplace sales and service standards that align with customer expectations are identified and selected 4.2 Customer loyalty strategies appropriate to customer profile are selected and implemented according to workplace procedures 4.3 Aftermarket service is reviewed regularly to ensure customer and workplace needs are met 4.4 Information that assists with improving sales and service operations and activities is provided to appropriate personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• use customer feedback to improve own customer relations.

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Skills	Description
Oral communication skills to:	• listen actively and use questioning techniques to gather, clarify and confirm customer information and feedback.
Digital literacy skills to:	• use digital systems and tools to access, filter, extract and organise customer information.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURSAA2002 Maintain customer aftermarket relations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSAA002 Maintain customer aftermarket relations

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- access and update customer data on an automotive workplace database or simulated customer database for three different customers
- provide professional aftermarket service relating to different aftermarket product or service requirements to the above customers.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- formal and informal channels and networks used to communicate with customers and to capture customer information
- role of social media in customer service
- typical fields of information or data captured in customer databases
- current and emerging customer needs, expectations and trends in the workplace or automotive industry
- key features of automotive industry and workplace customer loyalty programs and promotional activities
- active listening and questioning techniques
- telephone techniques
- strategies for dealing with dissatisfied customers
- basic marketing and sales techniques
- workplace procedures relating to:
  - aftermarket sales and service and processes
  - maintaining customer databases

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- key requirements relevant to aftermarket service of:
  - automotive industry codes of practice
  - workplace procedures relating to consumer rights and privacy
- vehicle and equipment product knowledge relevant to aftermarket product and sales.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to maintaining customer aftermarket relations, e.g. customer feedback forms.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive sales and service workplace or simulated workplace
- computer with customer database and information
- three different customers with different aftermarket requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSBA001 Carry out warehousing procedures in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to receive, store and dispatch goods in an automotive warehouse. It involves receiving inward goods, handling and storing goods, and dispatching goods that meet customer requirements.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Sales and Parts, Administration and Management

Unit Sector

Support and Logistics

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Receive incoming goods	1.1 General receiving bay housekeeping is undertaken according to workplace procedures

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.2 Received goods are checked and validated against ***delivery information*** according to workplace procedures 1.3 Received goods are unpacked and inspected according to workplace procedures and ***safety and environmental requirements*** 1.4 Discrepancies in quality of unpacked goods or breakages are documented according to workplace procedures 1.5 Stock levels are accurately documented on stock systems according to workplace procedures 1.6 Packing materials are disposed of according to workplace procedures
2. Store goods	2.1 Received goods are transported to appropriate storage area without causing damage to product or packaging according to workplace procedures and safety requirements 2.2 Goods and parts containers are labelled according to workplace procedures 2.3 Parts are transferred to labelled containers in storage area following established stock rotation procedures 2.4 Goods are stored according to workplace procedures and safety requirements and, where applicable, at correct temperatures to maintain product quality
3. Dispatch goods	3.1 ***Dispatch information*** is identified and confirmed 3.2 Goods for dispatch are selected and any identified non-conforming goods are labelled with supplier details and date and reason for return, or referred to supervisor 3.3 Goods for dispatch are packed securely, ***labelled*** and stored awaiting dispatch according to workplace procedures and safety requirements 3.4 Goods are dispatched to customer or end user according to workplace procedures 3.5 Warehousing documentation is completed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description

Reading skills to:	• interpret a range of warehousing documentation, including:
	  • stock ordering and stock delivery documentation
	  • warehousing work procedures
	  • purchase and stock supply agreements.

Writing skills to:	• legibly and accurately complete:
	  • warehouse stock control documents
	  • non-conforming stock return defect labels
	  • special delivery labels and shipping documents.

Numeracy skills to:	• interpret and apply numerical information when completing stock records and delivery documentation.
Digital literacy skills to:	• use digital systems and tools to access, search and retrieve information relating to stock and delivery requirements.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• technical skills to use stock recording equipment and mechanical and stock moving equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Delivery information must include:	• invoices • purchase orders.
Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for manually and mechanically handling stock • environmental requirements, including procedures for disposing of or recycling surplus packaging.
Dispatch information must include:	• invoices • picking slips • packing slips.

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Labelling must include:	• dispatch details that correspond to picking and packing slip • workplace shipping documentation.

Unit Mapping Information

Equivalent to AURSBA2001 Carry out warehousing procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSBA001 Carry out warehousing procedures in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- receive three different stock items into an automotive warehouse, in which the work must involve:
  - checking received goods against purchase orders and delivery documentation
  - following established workplace procedures for manual handling
- identify and raise appropriate documents for three different non-conforming or damaged stock items
- store three different stock items in the warehouse, in which the work must involve:
  - correctly labelling items before storage
  - storing items in the appropriate location
- dispatch three different stock items from the warehouse to the customer or end user, in which the work must involve:
  - identifying dispatch instructions
  - labelling items according to workplace procedures
  - completing shipping address details and any special instructions
- maintain workplace stock control documentation and warehouse computer records during above work.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for manually and mechanically handling stock

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- environmental requirements, including procedures for disposing of or recycling surplus packaging
- key features of relevant codes of practice, including those dealing with:
  - managing risks of hazardous chemicals in the workplace
  - managing the work environment and facilities
  - hazardous manual tasks
- key features of documentation required for the receipt and dispatch of warehouse items, including:
  - invoices
  - picking and packing slips
  - order forms
- warehouse workplace procedures, including procedures for:
  - safe and secure stock storage
  - stock rotation
  - labelling stock items
  - product quality standards
  - packing and unpacking goods
  - isolating out of date, missing or damaged stock
  - identifying correct warehouse location of items or goods
  - using barcoding equipment
  - disposing of waste
  - completing delivery and dispatch documentation
  - maintaining stock record documentation
  - matching stock labelling to picking and packing slip
  - isolating non-compliant goods.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to carrying out warehousing procedures in an automotive sales and service workplace, e.g. invoices, and picking and packing slips.

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Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following must be made available:

- automotive warehouse or simulated warehouse
- warehouse equipment, including:
  - stock
  - stock movement equipment
  - stock recording equipment
- warehouse documentation, including invoices, picking and packing slips, dispatch documentation and order forms.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSCA002 Present automotive products and services for sale

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to present automotive products and services in a business sales area to maximise product and service impact on customers, and monitor and review customer feedback. It involves applying knowledge of automotive products and basic display concepts to maintain and maximise product and service sales and the overall appearance of the sales area.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Sales and Parts, Administration and Management

Unit Sector

Sales and Marketing

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Maximise presentation	1.1 Stock presentation area is defined from floor and display plan,

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of sales area	observation of space available and work instructions 1.2 Minimum product numbers and types are determined and presented according to workplace procedures 1.3 Ancillary display materials are prepared to enhance presentation of stock 1.4 Stock display areas are kept clean, tidy and safe 1.5 Correct handling, storage and display techniques are used according to product types, workplace procedures and safety requirements
2. Display individual products	2.1 Display requirements are determined from workplace instructions 2.2 Product to be displayed is sourced according to workplace procedures 2.3 Product is displayed to ***maximise market appeal*** according to workplace procedures 2.4 Correct display labels, price tickets and ancillary materials are prepared and located with product 2.5 Product condition is monitored during display period and necessary action taken to maintain market appeal
3. Review effectiveness of presentation area	3.1 Feedback on display and presentation area is sought from customers 3.2 Action to improve presentation of stock and area is determined and acted on within scope of own role

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• interpret information from workplace instructions, floor and display plans, and product and service labelling and literature.
Writing skills to:	• legibly and accurately prepare display labels and price tickets.
Oral communication skills to:	• clarify instructions and make recommendations relating to display presentation.
Numeracy skills to:	• interpret numerical information in floor and display plans • use mathematical operations, including addition and subtraction, to estimate quantity and volume of product and stock.
Technology skills to:	• use specialised equipment to prepare labels and price tickets.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Maximising market appeal must include:	• ensuring product is clean and complete • locating product in a position that maximises presentation.

Unit Mapping Information

Equivalent to AURSCA2002 Present stock and sales area

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSCA002 Present automotive products and services for sale

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- organise a display or presentation area in an automotive workplace for three different automotive products
- organise a display or presentation area in an automotive workplace for two different automotive services.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to presenting products and services in an automotive workplace, including procedures for:
  - manually handling stock
  - ensuring clear walkways
  - handling chemicals and dangerous goods
  - using personal protective equipment (PPE)
- principles of display design, including:
  - creating impact
  - use of colour and illumination
  - accessibility and ease of maintenance
  - interactivity
- types and applications of display and presentation areas, including:
  - areas, including:
    - interior and exterior

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    - permanent and temporary
    - publicly accessible
  - display systems, including cable, rod and sign systems
  - showcases
  - brochure and information display systems
  - graphic display systems, including computer monitor, television and projector
- gaining feedback on effectiveness of display and presentation areas, including procedures for:
  - analysing sales
  - delivering and analysing simple customer questionnaires.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to presenting automotive products and services for sale, e.g. sales area floor plan.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following should be made available:

- automotive workplace or simulated workplace
- commercially realistic range of automotive services and products for sale
- commercially realistic presentation or display area
- materials needed for display of products and service information.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSCA004 Carry out cash and non-cash payment operations

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to undertake cash and non-cash transactions and prepare and distribute invoices.

It applies to those working in administration and sales finance roles in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Sales and Parts, Administration and Management

Unit Sector

Sales and Marketing

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Handle cash and non-cash payment transactions	1.1 Transaction amount is determined taking into account factors that impact on the balance 1.2 Cash is received and counted, and correct change is given 1.3 Credit and debit card transactions are processed using correct equipment and according to financial provider and workplace procedures 1.4 Cheques are received and examined for correctness 1.5 Cash, cheques and credit and debit card records are stored according to workplace procedures 1.6 Irregularities are noted and referred to supervisor for resolution 1.7 Receipts are issued and transactions documented according to workplace procedures
2. Carry out invoicing procedures	2.1 Invoicing requirements are determined and calculations performed to produce accurate customer invoices 2.2 Documentation is completed and content checked for accuracy 2.3 Invoices are distributed to appropriate persons or section for verification and approval prior to being dispatched 2.4 Approved invoices are dispatched within designated timeframes 2.5 Invoice copies are filed for auditing purposes according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	• interpret information in a range of financial operation documentation and workplace procedures.
Writing skills to:	• legibly and accurately prepare receipts and invoices relating to transactions.
Oral communication skills	• participate in verbal exchanges to convey and clarify information

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Skills	Description
to:	relating to irregularities in payment transactions.
Numeracy skills to:	• perform mathematical operations, including, addition, subtraction, multiplication, division, percentages and fractions, to determine accurate pricing and payment requirements.
Digital literacy skills to:	• use digital systems and tools to access, search and retrieve information relating to financial information.
Technology skills to:	• use workplace office or sales equipment when processing financial transactions • use workplace and point-of-sale technology to process a sale.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURSCA2004 Carry out cash, credit and funds transfers

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSCA004 Carry out cash and non-cash payment operations

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- determine transaction amount and conduct one of each of the following different payment operations:
  - cash
  - credit or debit card
  - cheque
- prepare three invoices for different products or services and submit them for payment.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key legal requirements relating to carrying out cash and non-cash payment operations, including obligations under the Australian Consumer Law (ACL)
- factors to be considered when calculating final price, including:
  - goods and services tax (GST)
  - sales, discounts and promotions
  - deposits and partial payments
- procedures for carrying out cash and non-cash operations, including:
  - calculating sales balance
  - receiving and counting money
  - common sales security procedures for handling cash
  - calculating and returning change, including using:
    - manual methods

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    - point-of-sale (POS) equipment
  - receiving and processing cheques
  - using electronic funds transfer at point-of-sale (EFTPOS) equipment
  - issuing receipts
- operation and maintenance of common sales equipment, including:
  - calculators
  - POS equipment, including procedures for changing receipt rolls
  - EFTPOS terminals
- procedures for preparing and distributing invoices, including:
  - types and applications of invoices
  - required contents of invoices
  - common types of software for producing invoices
  - common methods of distributing invoices to customers.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having carried out cash and non-cash payment operations in an automotive sales and service workplace, e.g. sales receipts and invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following should be made available:

- sales and service workplace or simulated workplace
- workplace procedures for carrying out cash and non-cash payment operations and distributing invoices
- commercially realistic situations involving cash and non-cash payment transactions
- point-of-sale software
- computer hardware, software and business equipment required for processing cash and non-cash transactions and preparing invoices.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSCA005 Sell automotive products and services

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to sell products and services in an automotive retail environment. It involves identifying potential sales opportunities, and presenting, demonstrating and selling a range of automotive products and services.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Sales and Parts, Administration and Management

Unit Sector

Sales and Marketing

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Engage customer and identify potential sale	1.1 Welcoming customer environment is maintained and customer is approached in a timely and professional manner according to workplace procedures

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.2 Appropriate interpersonal skills are used to engage the customer 1.3 Customer needs and expectations for specific products and services are identified through questioning and active listening
2. Present and demonstrate product or service to customer	2.1 Product or service options that best meet customer needs are selected 2.2 Product or service features, functions and accessories are explained and demonstrated, eliciting customer interaction 2.3 Customers are given the opportunity, if appropriate, to test or trial the product or service 2.4 Customers are assisted to identify their preferred option
3. Obtain customer agreement to purchase product or service	3.1 Price for product or service is discussed or negotiated and agreed 3.2 Sale is made using appropriate closing technique 3.3 Sale is processed and documented according to workplace procedures
4. Complete transaction and customer follow-up procedures	4.1 Product or service transaction is supplied or delivered to customer according to supplier specifications and workplace delivery procedures 4.2 Customer satisfaction is determined and remedial action is taken as required to maximise repeat business or referral opportunities 4.3 Opportunities for value adding or repeat sales are identified and follow-up action is taken as required 4.4 Customer records are completed and plans are developed for follow-up of potential new sales of products and services

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret textual and numerical information in product or service documentation to provide customer advice • interpret key information in sales documentation and work

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Skills	Description
	instructions to determine required action.
Writing skills to:	• legibly and accurately enter information into sales orders, workplace forms and databases.
Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate quantities and prices • estimate and calculate timeframes for organising delivery and follow-up services.
Digital literacy skills to:	• use digital systems and tools to access, search, and retrieve information relating to customers, products and services.
Problem solving skills to:	• resolve routine problems relating to product availability and service delivery.
Technology skills to:	• operate specialised point-of-sale equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURSCA2005 Sell products

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSCA005 Sell automotive products and services

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- sell automotive products or services to three different customers in an automotive sales and service workplace or simulated location.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- sales communication techniques, including:
  - customer buying signals
  - effective face-to-face and telephone selling techniques
  - upselling and value adding sales techniques
  - active listening and questioning techniques
  - strategies for dealing with dissatisfied customers
- key features of loyalty programs and strategies for encouraging repeat business
- workplace procedures relating to:
  - sales processes
  - dealing with customers
  - complaints handling
  - consumer rights and responsibilities
- key features of point-of-sale equipment, stock databases and service delivery calendars
- key legal requirements relating to selling automotive products and services, including obligations under the Australian Consumer Law (ACL).

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having sold a range of automotive products and services, e.g. sales invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive sales and service workplace or simulated location
- workplace procedures relating to customer sales and service
- product and service information
- commercially realistic range of automotive retail products and services
- point-of-sale equipment
- three different customers with commercially realistic sales needs.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSCA006 Promote automotive products and services

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to promote automotive products and services. It involves applying a high level of product or service knowledge, promoting products and services to current and potential customers, establishing on-selling opportunities in a sales situation, and recommending complementary products and services to customers.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Sales and Parts, Administration and Management

Unit Sector

Sales and Marketing

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Develop knowledge of automotive products	1.1 Use, purpose and application of products and services are researched and clarified as required

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
and services	1.2 ***Comparisons*** between available products and services, including complementary products and services, are researched and interpreted 1.3 Workplace promotional and marketing activities relevant to products and services are researched and interpreted
2. Identify and match customer needs to products and services	2.1 Customer buying motives and requirements are determined through questioning, active listening and non-verbal communication cues 2.2 Customer is guided to product or service that matches their identified buying motives and requirements 2.3 Features and benefits of product or service and relevance to customer requirements are explained and highlighted 2.4 Demonstrations are conducted and aligned to customer buying motives and requirements according to workplace marketing and sales practices 2.5 Selling techniques are used according to workplace procedures and legal requirements
3. Maximise sales opportunities	3.1 Opportunities for making additional sales are recognised and applied 3.2 On-sell opportunities are assessed through knowledge of customer needs and available complementary automotive products and services 3.3 Customer need and interest in additional or complementary products and services are determined 3.4 Benefits of additional or complementary products and services are discussed and promoted to customer

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• research and compare automotive products and services and workplace promotional campaigns to maintain currency of knowledge.

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Skills	Description
Reading skills to:	• interpret product and service specifications and promotional materials to advise customers • interpret and analyse customer information for on-selling opportunities.
Writing skills to:	• legibly and accurately prepare quotes and complete workplace forms and documentation relating to sales or promotional activities.
Oral communication skills to:	• describe and explain features and benefits of products and services using clear, jargon-free language, and tone and pace appropriate for customer.
Numeracy skills to:	• use mathematical operations, including addition, subtraction, multiplication, division and percentages, to estimate and calculate costs for customers.
Digital literacy skills to:	• use digital systems and tools to access, search and retrieve information relating to customers, products and services.
Technology skills to:	• demonstrate automotive products and services.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Comparisons must include:	• brand options • features of compared product or service • price of compared product or service.

Unit Mapping Information

Equivalent to AURSCA2006 Promote products and services

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSCA006 Promote automotive products and services

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- promote different automotive products or services to three different customers in line with workplace customer service standards.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- methods used to promote products and services, including:
  - strengths, weaknesses, opportunities and threats (SWOT) analysis
  - marketing and research techniques
  - face-to-face selling techniques
  - active listening and questioning techniques
  - upselling and value adding sales techniques
  - negotiation strategies when dealing with dissatisfied customers
  - loyalty programs and strategies for encouraging repeat business
- customer types, including:
  - customer buying signals and buyer behaviour
  - individual and cultural differences
- sources of information about automotive products and services and related promotional activities
- comparable products and services of major competitors
- workplace procedures relating to promotional processes and marketing activities, including marketing campaigns and advertising materials
- workplace procedures relating to promoting automotive products and services, including:

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- consumer protection
- automotive industry codes of practice relating to sales
- advertising codes of practice.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having promoted products and services in an automotive workplace, e.g. sales invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive sales and service workplace or simulated location
- workplace procedures relating to promotional sales activities
- sales material, including product and service information
- commercially realistic range of customers requiring different automotive products and services
- commercially realistic range of automotive retail products and services and associated promotional activities.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSCA007 Determine used motor vehicle stock requirements

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to research information from a range of sources to determine preferred and required used motor vehicle stock to purchase, and to identify sources for the stock.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Sales and Parts, Administration and Management

Unit Sector

Sales and Marketing

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Gather information to inform decision on used motor vehicle stock	1.1 Procedures for collecting relevant data are identified and adopted 1.2 Data is obtained from workplace used motor vehicle sales and management staff

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
requirements	1.3 Data is collected from workplace used motor vehicle sales history records
2. Determine requirements for selecting used motor vehicle stock	2.1 Data is analysed and selection criteria for preferred used motor vehicle stock are established according to workplace requirements 2.2 Prices of motor vehicles that meet selection criteria are reviewed and a budget is set for purchasing used motor vehicle stock 2.3 List of motor vehicles to be purchased is compiled and documented according to workplace procedures
3. Identify sources and providers of required used motor vehicle stock	3.1 Workplace data on past used motor vehicle purchases is collected and analysed to determine potential sources and providers of used motor vehicle stock 3.2 Additional sources of preferred used motor vehicle stock are researched and analysed 3.3 Experienced workplace staff are consulted for sources of preferred used motor vehicle stock 3.4 List of sources and providers of motor vehicles to be purchased is compiled and documented according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from technical specifications and financial data to determine used motor vehicle requirements.
Oral communication skills to:	• participate in verbal exchanges using active listening and questioning techniques to elicit knowledge and opinions about used motor vehicles from others and to confirm understanding.
Numeracy skills to:	• perform mathematical operations, including addition, subtraction, multiplication and division, to calculate percentages.
Digital literacy skills to:	• use digital systems and tools to access, filter, extract, organise

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Skills	Description
	and present information.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• operate office technology efficiently to source and collate information relating to used motor vehicle requirements.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURSCA3007 Determine used motor vehicle stock requirements

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSCA007 Determine used motor vehicle stock requirements

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- determine the used motor vehicle stock requirements of one motor vehicle dealership, including:
  - compiling a list of five motor vehicles to be purchased
  - compiling a list of sources and providers of the motor vehicles to be purchased.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- procedures for gathering data on used motor vehicle stock requirements, including examining:
  - socioeconomic profile of dealership area and potential customers
  - features and prices of:
    - current stock makes and models
    - new stock makes and models
  - dealership customer database
  - stock turnover rate and seasonal trends
- procedures for determining motor vehicle stock selection criteria, including:
  - using stock control software
  - analysing available statistics relevant to dealership
- procedures for sourcing vehicles to match selection criteria, including:
  - examining past motor vehicle purchases
  - locating motor vehicle wholesalers

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- consulting colleagues.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having determined used motor vehicle stock requirements in an automotive sales and service workplace, e.g. list of recommended motor vehicles to be purchased.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following should be made available:

- automotive sales and service workplace or simulated workplace
- workplace procedures relating to the sale of used motor vehicles
- sales and management staff to interview
- sources of information relating to used motor vehicle sales, including history records
- computer hardware and software, calculators and office equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSCA008 Wholesale used motor vehicle stock

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to research both own workplace records and retail buyer requirements in order to determine surpluses and used motor vehicle stock to sell on the wholesale market. It involves analysing data from a range of sources to inform decisions about market demand for used motor vehicle stock.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Sales and Parts, Administration and Management

Unit Sector

Sales and Marketing

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Canvass dealerships regarding requirements	1.1 Retail buyers are consulted to obtain data about their requirements for used motor vehicles

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
for used motor vehicles	1.2 Data from retail buyers is collected, collated and documented 1.3 Collected data is analysed
2. Check workplace records to determine stock surpluses and wholesaling options	2.1 Workplace records and databases relating to used motor vehicle stock are accessed and information relating to surplus stock is retrieved 2.2 Data from workplace records and databases is collated, analysed and documented 2.3 Analysed workplace data is compared with established retail buyer requirements within commercially realistic timeframe 2.4 Potential surplus used motor vehicle stock to wholesale is identified based on market demand
3. Wholesale used motor vehicle stock	3.1 Potential buyers of surplus used vehicle stock are identified from existing networks and available databases 3.2 Satisfactory selling or purchase price is negotiated with potential buyers 3.3 Surplus stock is sold to buyers in compliance with legislative and statutory requirements 3.4 Workplace records are updated to reflect sale and current holding of used motor vehicle stock

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting on used motor vehicle stock.
Oral communication skills to:	• convey and clarify information in verbal exchanges, using active listening and questioning to negotiate sale of surplus stock.
Numeracy skills to:	• perform mathematical operations, including, addition, subtraction, multiplication and division, to determine pricing of used motor vehicle stock.

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Skills	Description
Initiative skills to:	• follow up on leads and sources of additional information relating to demand and potential sale of used motor vehicle stock.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURSCA3008 Wholesale used motor vehicle stock

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSCA008 Wholesale used motor vehicle stock

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- wholesale five used motor vehicles to one or more retail buyers.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- procedures for gathering data of surplus used motor vehicle stock, including examining:
  - features and prices of current stock makes and models
  - dealership customer database
  - stock turnover rate and seasonal trends
- procedures for determining surplus motor vehicle stock selection criteria, including:
  - using stock control software
  - analysing available statistics relevant to used motor vehicle stock
- procedures for selling surplus vehicle stock, including:
  - locating motor vehicle retailers
  - determining acceptable selling prices of stock and negotiating with retailers
- key requirements of industry codes of practice and state and territory legislation covering the sale and purchase of used motor vehicles.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to wholesaling used motor vehicle stock in an automotive sales and service workplace, e.g. sales invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following should be made available:

- automotive sales and service workplace or simulated workplace
- workplace procedures relating to the sale of used motor vehicles
- five surplus used motor vehicles to wholesale
- commercially realistic potential buyers of used motor vehicle stock
- sources of information relating to used motor vehicle sales
- computer hardware and software, calculators and office equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSCA010 Appraise and purchase used motor vehicles for sale

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and appraise used motor vehicles against workplace criteria and pricing guides in preparation for negotiating to purchase them. It involves analysing information from a range of sources to make decisions about purchasing used motor vehicles, and negotiating and securing used motor vehicles for stock.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Sales and Parts, Administration and Management

Unit Sector

Sales and Marketing

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Inspect used motor	1.1 Used motor vehicle is selected for inspection using workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
vehicle	selection criteria 1.2 Vehicle is inspected and appraised according to workplace procedures 1.3 Information collected from vehicle appraisal process is matched with information available in pricing guides
2. Value vehicle	2.1 Collected information is analysed to determine vehicle value 2.2 Requirement for vehicle is determined on the basis of any analysis of workplace records and stock requirements 2.3 Issues and concerns about the used motor vehicle are discussed with experienced team members and supervisor
3. Negotiate vehicle purchase price	3.1 Vehicle is appraised based on information collected and appraisal is discussed with owner 3.2 Satisfactory purchase price is negotiated with owner using key points identified in appraisal as negotiating points
4. Purchase vehicle and finalise purchase process	4.1 Used vehicle is purchased according to workplace budget and procedures 4.2 Purchase process and required documentation are completed according to workplace procedures and legislative and statutory requirements 4.3 Workplace records are updated to reflect vehicles purchased

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• participate actively in verbal exchanges and clearly present an argument to negotiate a purchase price.
Numeracy skills to:	• perform mathematical operations, including, addition, subtraction, multiplication and division, to calculate the number

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Skills	Description
	and price of used motor vehicles.
Technology skills to:	• operate office technology efficiently to source and collate information relating to appraisals and the negotiation of used motor vehicle purchases.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURSCA3010 Appraise and purchase used motor vehicles to supplement stock for sale

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSCA010 Appraise and purchase used motor vehicles for sale

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- inspect and appraise three different used motor vehicles
- negotiate a purchase price for the above three vehicles within workplace agreed budgets.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- basic operating principles of motor vehicle systems and components, including types and models of vehicles
- procedures for appraising used motor vehicles, including:
  - accessing vehicle price guides
  - inspecting vehicles
  - assessing value of vehicle accessories
  - interpreting automotive industry trends in used motor vehicle supply and demand
- procedures for purchasing used motor vehicles, including:
  - communication and negotiation processes, including:
    - presenting a persuasive argument
    - collaborative negotiation techniques
  - documentation requirements relating to the purchase of used motor vehicles, including sales contracts and safety certificates
- key requirements of industry codes of practice and state and territory legislation covering the sale and purchase of used motor vehicles.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having appraised and purchased used motor vehicles for an automotive sales and service workplace, e.g. purchase documentation.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following should be made available:

- automotive sales and service workplace or simulated workplace
- workplace procedures and documentation relating to the purchase of used motor vehicles
- three different used motor vehicles to appraise, and their owners.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSCA011 Conduct online transactions in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to conduct online transactions when selling a range of automotive products and services, and includes dispatching goods and checking processed online transactions.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Sales and Parts, Administration and Management

Unit Sector

Sales and Marketing

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Perform online transactions	1.1 Workplace requirements for online sale of automotive products and services are confirmed 1.2 Online personal authentication information is secured according to workplace requirements 1.3 Appropriate online functions and processes to supply required automotive products and services are determined 1.4 Technical difficulties in accessing and using online facilities are reported to online service provider
2. Administer online transactions	2.1 Online transaction is completed and purchased automotive product or service is dispatched according to terms of online transaction 2.2 Records of transactions are completed and maintained according to workplace procedures 2.3 Workplace records are compared with online records, and irregularities are reported according to workplace procedures
3. Review effectiveness of online transactions	3.1 Automotive products and services rendered are reviewed to determine quality and timeliness of delivery in relation to advertised profile and content 3.2 Customer feedback is analysed against online transaction history to determine customer satisfaction 3.3 Any issues with service provider are reported to supervisor according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• access a range of online information and contextualise to transaction requirements.
Reading skills to:	• interpret key information in sales documentation and work instructions to determine required sales action.
Writing skills to:	• use specific and relevant language when communicating required information

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Skills	Description
	• legibly and accurately enter information into sales orders, workplace forms and databases.
Oral communication skills to:	• articulate requirements clearly using listening and questioning techniques to clarify and confirm understanding • deliver specific and factual information appropriate to audience and environment.
Digital literacy skills to:	• use a range of online applications to access, filter and extract information and process online transactions.
Numeracy skills to:	• use mathematical operations, including addition, subtraction, multiplication and division, to calculate quantities and prices.
Self-management skills to:	• estimate and calculate timeframes for organising delivery and follow-up services.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSCA011 Conduct online transactions in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- sell different automotive products or services online to three different customers
- review effectiveness of online transactions, confirming that quality of products and services delivered met customer expectations.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key legal requirements relating to carrying out online transactions, including obligations under the Australian Consumer Law (ACL)
- factors to be considered when calculating final price, including:
  - goods and services tax (GST)
  - sales, discounts and promotions
  - deposits and partial payments
- types, application and operation of common electronic bill payment systems, including:
  - biller direct
  - bank aggregator
- procedures for carrying out online transactions, including:
  - following bill payment system processes, including:
    - logging in
    - receiving orders
    - generating accounts
    - generating billing

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  - dispatching goods, including tracking goods and confirming delivery
  - creating, maintaining and reconciling sales records
- procedures for reviewing bill payment system, including:
  - assessing customer satisfaction
  - comparing costs of other providers.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having carried out online transactions in an automotive sales and service workplace, e.g. sales invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following should be made available:

- automotive workplace procedures relating to sales
- automotive retail products and services for sale online
- online product or service information, including automotive online sales website
- three different online customers with commercially realistic purchasing requirements
- computer system with internet connection
- stock databases and service delivery calendars.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSLA001 Comply with legal requirements when selling automotive products and services

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to locate, interpret and comply with legal requirements relating to the sale of automotive products and services to customers.

It applies to those working in the automotive sales and service industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Sales and Parts, Administration and Management

Unit Sector

Regulatory or Legal

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify legal requirements and procedures relating to	1.1 Legislation relating to selling automotive products or services is accessed and interpreted 1.2 Legal requirements specific to the sale of the automotive

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
sale of automotive products and services	workplace product or service range are identified 1.3 Workplace procedures relating to complying with legal requirements are sourced and interpreted
2. Sell product or service in compliance with legal requirements	2.1 Product or service is sold according to workplace procedures and identified legal requirements 2.2 Customer transaction is handled according to consumer legislation 2.3 Accurate advice and information are provided to customers about product and consumer rights 2.4 Advice is sought from supervisor where clarification or assistance is needed
3. Record required information on product or service sale documentation	3.1 Correct product or service sale documentation is selected and accessed according to workplace procedures 3.2 Clear and accurate information is provided on sales documentation to comply with legal requirements 3.3 Signed acknowledgement of information provided is obtained from customer, as required 3.4 Sales documentation is completed and stored according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• keep up-to-date with changes relating to legal requirements in the sale of automotive products and services.
Reading skills to:	• interpret key legal information in sales and related documentation.
Writing skills to:	• legibly and accurately complete required sections of sales documentation to comply with legal requirements.
Oral communication skills to:	• give clear and accurate information and instructions to customers relating to legal requirements, and respond to questions correctly • participate in verbal exchanges relating to automotive products

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Skills	Description
	using pace, tone and gestures suited to customers from diverse backgrounds.
Numeracy skills to:	• interpret and explain numerical information relating to cost and time limitations to customers.
Digital literacy skills to:	• access, search and retrieve information relating to legal requirements, customers and automotive products and services.
Planning and organising skills to:	• sequence and plan handover of sales and product or service information to customers.
Technology skills to:	• demonstrate the safe operation of automotive products • use business technology to complete sales documentation and satisfy storage requirements.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURSLA2001 Apply legal requirements relating to product sale

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURSLA001 Comply with legal requirements when selling automotive products and services

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- sell different automotive products or services to three different customers, in which the sale must involve:
  - complying with legal requirements
  - providing accurate product or service and consumer information to customers
  - correctly completing required sales documentation.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- requirements of relevant legislation, standards and codes of conduct relating to the sale of automotive products and services, including consumer rights and guarantees under the Australian Consumer Law (ACL), including:
  - consumer guarantees applying to products
  - consumer guarantees applying to services
  - exceptions to consumer guarantees
  - compensation for damages and loss
  - manufacturer's liability for faulty products
  - lawful wording of refund and return signs
  - customer complaint resolution
- roles of the Australian Competition and Consumer Commission (ACCC) in relation to consumer guarantees, including:
  - providing guidance on consumer guarantees
  - investigating complaints

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    - taking action on behalf of individuals
- types and application of product sale documentation, including procedures for completing and storing documentation.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having complied with legal requirements when selling automotive products and services, e.g. sales invoices.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive sales and service workplace or simulated workplace
- workplace procedures relating to automotive product and service sales
- access to requirements of relevant legislation, standards and codes of conduct relating to the sale of automotive products and services, including consumer rights and guarantees under the ACL
- three different customers
- different automotive products or services for sale
- documentation required to complete a sale and fulfil legal requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTGA001 Drive and manoeuvre trailers

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to drive and manoeuvre a trailer while it is attached to a driving vehicle. It involves inspecting the trailer before use, connecting the trailer to a vehicle, driving the trailer, and disconnecting the trailer from the vehicle.

It applies to those working in the automotive service and repair industry. The trailers may have non-pivoting axles or pivoting front axles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Carry out trailer safety inspection	1.1 ***Pre-operational inspections and checks*** of trailer are carried out according to manufacturer specifications and workplace procedures 1.2 Trailer load is inspected and secured according to manufacturer

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	specifications and workplace procedures 1.3 Safe condition of towing vehicle is determined according to manufacturer specifications and workplace procedures
2. Connect trailer to vehicle	2.1 Trailer and vehicle are aligned and trailer is coupled to vehicle according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Ancillary devices are connected between vehicle and trailer according to manufacturer specifications and workplace procedures 2.3 Trailer and vehicle connections are tested according to manufacturer specifications and workplace procedures 2.4 Faults are identified and action is taken to report them according to workplace procedures
3. Drive and manoeuvre trailer	3.1 Brake lock-out devices are set according to manufacturer procedures 3.2 Trailer is safely manoeuvred by vehicle in forward and reverse directions and parked according to road safety regulations, and without causing damage to trailer, towing vehicle, other vehicles or surrounding environment
4. Disconnect trailer from vehicle	4.1 Parking devices of trailer and vehicle are applied as appropriate according to manufacturer procedures 4.2 Ancillary devices are disconnected and trailer is decoupled from vehicle according to manufacturer specifications, workplace procedures and safety requirements 4.3 Trailer or vehicle is placed in appropriate parking area according to road safety regulations

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Reading skills to:	• interpret state and territory regulations for towing trailers and road signs.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings and trailer faults.
Oral communication skills to:	• report inspection findings and trailer faults to workplace supervisor and customers.
Numeracy skills to:	• use basic mathematical processes, including addition and subtraction, to calculate trailer load and perform simple measurements of trailer dimensions • interpret numerical information on trailers, such as aggregate trailer mass and gross trailer mass.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Pre-operational inspections and checks must include:	• braking systems • suspension and axles • electrical systems • wheels and tyres.
Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for manually manoeuvring trailers.

Unit Mapping Information

Equivalent to AURTGA3001 Drive and manoeuvre trailers

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTGA001 Drive and manoeuvre trailers

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- drive and manoeuvre two different trailers on a road with curves.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to driving and manoeuvring trailers, including procedures for manually manoeuvring trailers
- key features of relevant state and territory regulations relating to trailers, including those relating to:
  - couplings
  - safe towing weights
  - towing speeds
  - braking
- application, purpose and operation of trailers, including:
  - pivot and non-pivot trailers
  - definition of aggregate trailer mass and gross trailer mass
- trailer coupling systems, including:
  - tow ball
  - lunette ring
  - weight distributing hitch
- inspection procedures for trailers, including:
  - coupling system

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    - electrical system
    - braking system
    - wheel assembly and bearings
    - suspension system
- loading procedures for trailers, including:
    - centre of mass location
    - tongue weight
    - methods for determining maximum towing capacity of vehicle
    - methods for determining load capacity of towbar
- driving and manoeuvring techniques, including:
    - effects of trailer on overall turning circle
    - effects of trailer on acceleration, steering and braking
    - methods of avoiding and controlling vehicle and trailer sway
    - methods of reversing a trailer.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the trailers that they have driven and manoeuvred, e.g. trailer log book.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- road with curves suitable for trailer forward and reverse driving, manoeuvring and parking
- trailer specifications and relevant state and territory regulations for towing trailers
- two different trailers and towing vehicles with suitable trailer couplings.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTNA001 Estimate and quote automotive vehicle or machinery modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to prepare a quotation to modify the mechanical, electrical or body systems of a vehicle or machinery in order to estimate and calculate the costs, including materials, labour and overhead costs, of the modification. Mechanical and electrical systems and body enhancement kit modifications must comply with Australian Design Rules and Vehicle Safety Bulletins.

It applies to those working in the automotive service and repair industry. It includes quotations for light vehicles, heavy vehicles, agricultural machinery and mobile plant machinery, recreational vehicles or motorcycles. The unit does not apply to estimating and quoting on vehicle body structural repairs.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Loss Assessment or Repair Quoting

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to quote	1.1 Modification requirements are identified and clarified with customer 1.2 Workplace quotation information and recommended labour time guides are sourced and interpreted 1.3 Job cost estimation and calculation details are sourced and interpreted
2. Estimate cost to modify vehicle or machinery	2.1 Estimated time requirements for job are calculated and compared to recommended labour time guides and previous similar completed estimates 2.2 Feasibility of using replacement parts instead of refurbished parts is evaluated in line with original equipment manufacturer (OEM) specifications 2.3 Replacement or refurbished parts required for job are included in quotation 2.4 Parts and consumables are costed according to workplace pricing procedures 2.5 Parts and work needing to be subcontracted are identified and costed 2.6 Potential variations are identified and noted 2.7 Job labour cost estimate is documented and agreed with workplace supervisor 2.8 Quotation variations relating to unsighted damage are noted and prepared for customer acceptance 2.9 Final estimate is reviewed by workplace supervisor and quotation is finalised

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
3. Complete quotation processes	3.1 Detailed quotation is provided to customer for approval 3.2 Approval from customer to commence work and undertake any supplementary quotation work is obtained as required 3.3 Documentation is completed and quotation stored according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Reading skills to:	• interpret job requirement information, OEM specifications and procedures, and labour time guides efficiently.
Writing skills to:	• legibly and accurately complete: • vehicle inspection or proposed modification report • modification quotation.
Oral communication skills to:	• participate in verbal exchanges using active listening and questioning techniques to gather, clarify and confirm customer information and feedback.
Numeracy skills to:	• use mathematical equations, including addition, subtraction, multiplication, division and percentages, to perform calculations and check accuracy of costs of options and solutions.

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Skills	Description
Digital literacy skills to:	• use digital systems and tools to access, search and retrieve information relating to products and services.
Technology skills to:	• use workplace technology to assist in preparing a modification quotation.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURTNA5001 Estimate and calculate costs to repair, maintain or modify a vehicle

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTNA001 Estimate and quote automotive vehicle or machinery modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria and foundation skills:

- estimate and quote modifications to three different vehicles or machinery, including:
  - one mechanical modification
  - one electrical modification
  - one body modification.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to estimating and quoting vehicle or machinery modifications, including:
  - quality requirements
  - reporting and recording procedures
  - procedures for selecting and using personal protective equipment (PPE) and hand tools
- location and content of:
  - original equipment manufacturer (OEM) specifications and workplace procedures
  - costing catalogues
  - labour time guides
- principles of estimating and job costing
- procedures and processes for identifying, apportioning, validating and documenting total costs for work, including components of estimates and job costings, including:
  - labour
  - parts

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    - costs relating to required external products or services
- requirements of Australian Design Rules (ADRs) and Vehicle Safety Bulletins (VSBs) relating to mechanical and electrical system and body enhancement modifications.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having provided a quotation relating to a vehicle or machinery modification, e.g. quotations.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- three different vehicles or machinery requiring estimates and quotes relating to mechanical and electrical system or body enhancement modifications
- OEM specifications and workplace procedures
- labour time guides
- office equipment, including calculators, computer, internet and software
- manufacturer and component refurbishing costing guides.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA001 Remove and tag steering, suspension and braking system components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify, remove and tag a range of steering, suspension and braking system components. It involves preparing for the work, removing and tagging components by title, job number and application, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation for entering the automotive retail, service and repair industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and tag steering, suspension or braking system component	1.1 Task instructions are interpreted and vehicle to be worked on is identified 1.2 Steering, suspension or braking system component information is sourced and interpreted 1.3 Potential hazards and risks associated with the task are identified and reported to workplace supervisor 1.4 Tools and equipment are selected and checked for serviceability
2. Remove component	2.1 Component for removal is identified 2.2 Component is removed according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to components or systems 2.3 Removed component is inspected and findings are recorded according to workplace procedures
3. Tag component	3.1 Tagging procedures are identified 3.2 Removed component is legibly ***tagged*** according to workplace procedures and without causing damage to vehicle or other components 3.3 Tagged component is stored according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instructions and workplace standards 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer specifications, workplace procedures, and safety requirements relating to steering, suspension and braking system components.
Writing skills to:	• legibly and accurately fill out workplace documentation, including tags, using correct industry terminology and conventions.
Numeracy skills to:	• interpret numerical information in task instructions and part numbers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with stored energy in springs, air springs and torsion bars
	  • working with brake dust and hydraulic fluids
	• environmental requirements, including procedures for:
	  • trapping, storing and disposing of oils and fluids
	  • safely disposing of contaminated parts and components.

Tagged must include:	• component title • component condition • job number.

Unit Mapping Information

Equivalent to AURTTA1001 Remove and tag steering, suspension and brake system components

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Links

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Assessment Requirements for AURTTA001 Remove and tag steering, suspension and braking system components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and tag the following components from one vehicle:
  - steering component
  - suspension component
  - brake component.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and tagging steering, suspension and braking system components, including procedures for:
  - working with stored energy in springs, air springs and torsion bars
  - working with brake dust and hydraulic fluids
- environmental requirements, including procedures for:
  - trapping, storing and disposing of oils and fluids
  - safely disposing of contaminated parts and components
- identification and basic function of components to be removed and tagged, including:
  - steering components
  - suspension components
  - brake components
- procedures for removing and tagging steering, suspension and braking system components, including:

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- component removal
- component inspection
- component tagging, including key information required on tags
- component storage.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the steering, suspension and braking system components that they have removed and tagged, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer steering, suspension and brake specifications
- one vehicle with the components specified in the performance evidence requiring removal and tagging
- tools, equipment and materials appropriate for removing and tagging steering, suspension and braking system components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA002 Assist with automotive workplace activities

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to assist with automotive workplace activities. It involves preparing for the work, assisting with workplace cleaning and component removal and refitting activities as required, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation for entering the automotive retail, service and repair industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for workplace activities	1.1 Task instructions are interpreted and activities are identified 1.2 Workplace activity information is sourced and interpreted 1.3 Potential hazards and risks associated with the task are identified and reported to workplace supervisor 1.4 Tools and equipment are selected and checked for serviceability
2. Undertake workplace activities	2.1 ***Workplace activities*** are carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to components, systems or vehicles 2.2 Assistance is sought from appropriate persons when difficulties arise
3. Complete work processes	3.1 Final inspection is made to ensure work meets task instructions and workplace standards 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer specifications, workplace procedures and safety requirements relating to workplace activities.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.

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Skills	Description
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate quantities and volume of materials.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Workplace activities must include:	• component removal and refitting • component cleaning • workplace housekeeping • vehicle washing and cleaning.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE)
	  • safely handling chemicals
	• environmental requirements, including procedures for trapping, storing and disposing of cleaning agents and contaminants.

Unit Mapping Information

Equivalent to AURTTA1002 Carry out workshop practice activities

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA002 Assist with automotive workplace activities

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out the following automotive workplace activities:
  - remove and refit one component of a vehicle or machinery
  - clean one component of a vehicle or machinery
  - clean an area of the workplace as directed by supervisor
  - wash the exterior and clean the interior of one vehicle or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to carrying out automotive workplace activities, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - safely handling chemicals
- environmental requirements, including procedures for trapping, storing and disposing of cleaning agents and contaminants
- procedures for vehicle and component cleaning , including:
  - identifying and using cleaning equipment, including:
    - high pressure washing
    - manual washing
    - vacuuming
  - types and application of cleaning agents
  - preventing damage to systems and components during cleaning activities

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- procedures for removing and refitting components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the workplace activities that they have carried out in an automotive workplace, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- one vehicle or machinery to complete the activities specified in the performance evidence
- manufacturer cleaning and component specifications
- cleaning equipment, cleaning agents, tools, equipment and materials appropriate for carrying out automotive workplace activities.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA003 Use and maintain basic mechanical measuring devices

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to use and maintain basic mechanical measuring devices. It involves selecting, using and maintaining basic measuring devices, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Select and use basic mechanical measuring devices	1.1 Task instructions are interpreted and vehicle to be worked on is identified 1.2 Measuring device information is sourced and interpreted 1.3 Potential hazards and risks associated with the task are identified and reported to workplace supervisor 1.4 Measuring devices are selected to meet job requirements, and checked for serviceability and calibration according to manufacturer specifications and workplace procedures 1.5 Measuring devices are used according to manufacturer specifications, workplace procedures and ***safety requirements***
2. Maintain devices	2.1 Measuring devices are maintained and stored according to manufacturer specifications and workplace procedures 2.2 Faulty devices are tagged and reported according to workplace procedures as required
3. Complete work processes	3.1 Final inspection is made to ensure work meets task instructions and workplace standards 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer specifications, workplace procedures and safety requirements relating to maintenance procedures and specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation, including tags, using correct industry terminology and

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Skills	Description
	conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate distances and tolerances from manufacturer specifications.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including safe operating procedures for basic mechanical measuring devices.

Unit Mapping Information

Equivalent to AURTTA1003 Use and maintain basic measuring devices

Links

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Assessment Requirements for AURTTA003 Use and maintain basic mechanical measuring devices

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- use and maintain three of the following basic mechanical measuring devices:
  - inside and outside calipers
  - steel rulers
  - depth gauges
  - spirit levels
  - tape measures
  - squares
  - T-squares
  - straight edges.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to using and maintaining basic mechanical measuring devices, including safe operating procedures for basic mechanical measuring devices
- types, uses, limitations and operating procedures for the basic mechanical measuring devices specified in the performance evidence
- procedures for selecting measuring devices
- procedures for identifying and tagging faulty measuring devices
- basic maintenance, adjustment, calibration and storage procedures for mechanical measuring devices.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mechanical measuring devices they have used and maintained, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer mechanical measuring device specifications
- basic mechanical measuring devices specified in the performance evidence
- vehicles, components or materials that require the use of basic mechanical measuring devices
- tools, equipment and materials appropriate for using and maintaining basic mechanical measuring devices.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA005 Select and use bearings, seals, gaskets, sealants and adhesives

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to select and use bearings, seals, gaskets, sealants and adhesives in the automotive vehicle industry. It involves preparing for the task, selecting and using sealants and adhesives, preparing and installing bearings, seals and gaskets, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry, It includes agricultural machinery, heavy commercial vehicles, light vehicle, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to select and use bearings, seals, gaskets, sealants and adhesives	1.1 Job requirements are determined from workplace instructions 1.2 Procedures, information and specifications are sourced and identified 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Select and use sealants and adhesives	2.1 Sealants and adhesives appropriate for the job requirement are selected 2.2 Sealants and adhesives are used according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.3 Sealants and adhesives are stored according to manufacturer specifications and workplace procedures
3. Prepare and install bearings, seals and gaskets	3.1 Procedures and information for preparing, inspecting and installing bearings, seals and gaskets are identified and sourced 3.2 Bearings, seals and gaskets are installed, and bearings adjusted as required, according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation, including recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• measure and adjust automotive components and calculate distances, tolerances and deviations from manufacturer specifications • use basic mathematical operations, including addition and subtraction, to calculate sealant and adhesive volumes.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision tools and equipment, such as torque wrenches and dial gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working safely with sealants and adhesives, lubricants and greases
	• environmental requirements, including procedures for trapping, storing and disposing of:
	  • excess materials produced when applying sealants and adhesives
	  • lubricants and greases released during work processes.

Unit Mapping Information

Equivalent to AURTTA2005 Select and use bearings, seals, gaskets, sealants and adhesives

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Assessment Requirements for AURTTA005 Select and use bearings, seals, gaskets, sealants and adhesives

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- prepare and install:
  - two of the following bearing types:
    - roller type bearing
    - ball type bearing
    - plain type bearing
  - two different gaskets
  - two different seals
- select and use two different sealants and adhesives.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working safely with sealants and adhesives, lubricants and greases
- environmental requirements, including procedures for trapping, storing and disposing of:
  - excess materials produced when applying sealants and adhesives
  - lubricants and greases released during work processes
- identification, application, function and operating principles, including:
  - bearings, including ball, roller and plain
  - seals, including lip, face, O ring, square section ring, and metal surface
  - gaskets, including treated paper, cork, composite materials, metal, synthetic, rubber, fibre, and nylon

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- types, characteristics, uses and limitations of sealants and adhesives, including application techniques
- inspection, service, installation and adjustment procedures, including:
  - bearings, including:
    - roller types
    - ball types
    - plain types
  - seals and sealing surface condition
  - gaskets
- types and applications of bearing lubricants and greases.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bearings, seals, gaskets, sealants and adhesives they have selected and used, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications relating to bearings, seals, gaskets, sealants and adhesives
- vehicle or equipment requiring the application of bearings, seals, gaskets, sealants and adhesives
- bearings, seals, gaskets, sealants and adhesives as specified in the performance evidence
- tools, equipment and material appropriate for installing bearings, seals and gaskets.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA006 Inspect and service hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service hydraulic systems. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The hydraulic systems include those of agricultural machinery, heavy commercial vehicles, marine vessels, mobile plant machinery or outdoor power equipment. This unit is not intended for drive systems, power steering or hydraulic braking systems.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service hydraulic system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect hydraulic system	2.1 ***Hydraulic system*** inspection and operational testing are carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service hydraulic system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and hydraulic system is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to hydraulic systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use mathematical operations, including addition and subtraction, to determine liquid quantities • interpret pressure gauges and units of pressure.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Hydraulic system must include:	• reservoir • accumulator • pump • valves • actuators • motor • filters • hoses, pipes and connectors.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using raising, lowering and supporting equipment
	  • working with fluids under pressure
	  • working with hot fluid hazards
	  • isolating and stabilising vehicles or machinery
	• environmental requirements, including procedures for:
	  • trapping, storing and disposing of hydraulic fluid released from hydraulic systems

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	• disposing of filters.

Unit Mapping Information

Equivalent to AURTTA2006 Service hydraulic systems

Links

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Assessment Requirements for AURTTA006 Inspect and service hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service two different hydraulic systems, in which the work must involve:
  - evaluating hydraulic fluid condition
  - replacing hydraulic filters
  - carrying out adjustments
  - carrying out visual inspections
  - carrying out operational testing.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing hydraulic systems, including procedures for:
  - using raising, lowering and supporting equipment
  - working with fluids under pressure
  - working with hot fluid hazards
  - isolating and stabilising vehicles or machines
- environmental requirements, including procedures for:
  - trapping, storing and disposing of hydraulic fluid released from hydraulic systems
  - disposing of filters
- identification, function and basic operation of major hydraulic system components, including:
  - reservoir

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  - accumulator
  - pump and charge pump
  - pump
  - valves
  - actuators
  - motor
  - oil cooler
  - filters
  - hoses, pipes, connectors and fittings
- AS 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- types and applications of hydraulic oils, including:
  - additives
  - viscosity ratings
  - viscosity index
  - fire resistant fluids
  - synthetic fluids
- types and applications of hydraulic filters, including:
  - filter types
  - position of filters
  - filter ratings
- inspection, evaluation and operational test procedures for hydraulic systems, including:
  - hydraulic oil sampling
  - oil contamination control
  - cycle times checks
  - pressure checks
- service and adjustment procedures for hydraulic systems, including:
  - oil and filter replacement scheduling
  - oil cleanliness procedures
- post-service testing procedures for hydraulic systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the hydraulic systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer hydraulic system specifications
- AS 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- two different hydraulic systems requiring servicing
- tools, equipment and materials appropriate for the inspection and servicing of hydraulic systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA007 Inspect, service and repair pneumatic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, service and repair faults in pneumatic systems and components. It involves preparing for the task, inspecting the system to determine the service and repair requirements, carrying out the service and repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The pneumatic systems include those of agricultural machinery, heavy commercial vehicles or mobile plant machinery. Work includes compressors, linear or rotary actuators, drive motors, conductors and control valves.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect, service and repair pneumatic system	1.1 Job requirements are determined from workplace instructions 1.2 Inspection procedures and information are sourced and interpreted 1.3 Options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Inspect pneumatic system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Faults are identified from inspection results and causes of faults are determined 2.3 Inspection findings are reported according to workplace procedures, and include recommendations for necessary service, repairs or adjustments
3. Carry out service and repair activities	3.1 Service and repair procedures and information are sourced and interpreted 3.2 Service and repair tools, equipment and materials are selected and checked 3.3 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.5 Post-repair testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking pneumatic system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify workplace instructions and determine job requirements.
Numeracy skills to:	• measure pneumatic system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • understand measuring and test equipment divisions.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers, micrometers and pressure gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with stored pressure • environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from pneumatic

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	systems.

Unit Mapping Information

Equivalent to AURTTA2007 Inspect, service and repair pneumatic systems

Links

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Assessment Requirements for AURTTA007 Inspect, service and repair pneumatic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, service and repair two different pneumatic systems, including the following components in each system:
  - compressors and filters
  - linear and rotary actuators
  - pipes, hoses and connectors
  - control valves
- test above pneumatic systems, including:
  - adjusting and testing pneumatic components
  - setting up and testing compressor cut-out system
  - testing for system leaks.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, servicing and repairing pneumatic systems, including procedures for working with stored pressure
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from pneumatic systems
- types and applications of pneumatic systems
- pneumatic system schematic diagrams and symbols
- identification, function and operation of pneumatic systems and components, including:
  - clamping systems

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  - hydropneumatic intensifiers
  - rotary and screw compressors
  - linear actuators
  - rotary actuators
  - drive motors
  - lines, hoses and couplings
  - control valves
- types of lubricants suitable for pneumatic systems, and their application and methods of lubrication
- inspection, servicing and repair procedures for pneumatic systems
- pneumatic system test and commissioning procedures
- post-repair testing procedures for pneumatic systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the pneumatic systems that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer pneumatic system specifications
- two different vehicles or machinery with pneumatic systems requiring service and repair
- tools, equipment and materials appropriate for inspecting, servicing and repairing pneumatic systems.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA008 Produce patterns and templates

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to produce patterns and templates for manufacturing parts or assisting the fitting of accessories. It involves preparing for the task, planning the process, plotting the dimensions and completing the pattern or template, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for production of pattern or template	1.1 Job requirements are determined from workplace instructions 1.2 Size requirements are checked in relation to production process and finishing capacity of workplace 1.3 Type and quantity of patterns and templates to be produced are identified and materials are obtained 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Plan process	2.1 Material required for pattern or template is identified for approximate size and characteristics 2.2 Required instruments and equipment are identified, located and assembled 2.3 Drawings and related specifications are identified and interpreted 2.4 Procedures for using pattern development instruments and tooling are confirmed, and equipment and tooling are prepared for use
3. Plot dimensions	3.1 Equipment and tooling are used according to workplace procedures 3.2 Each dimension is measured, exploded and plotted, while maintaining angles, arcs and curves 3.3 Visual inspection and measurements are used to compare pattern dimensions and shapes with drawings and specifications
4 Complete pattern or template	4.1 Pattern or template is completed according to ***safety requirements*** and ensuring that it indicates completion date and original drawing details 4.2 Required workplace approval of pattern or template is obtained 4.3 Plans are marked with ***notations*** according to workplace procedures 4.4 Plans are copied and filed according to workplace procedures
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and pattern or template is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret technical information and terminology relating to patterns and templates.
Writing skills to:	• produce patterns and templates using symbols, codes, legends and diagrammatic representations • legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• clarify instructions.

Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate:
	  • angles, arcs and curves
	  • tolerances and deviations from manufacturer specifications.

Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use drawing tools and equipment to produce patterns and templates.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for using sharp cutting tools and equipment.

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Notation must include:	• authorship • process or customer requirements • authorisation • review dates.

Unit Mapping Information

Equivalent to AURTTA2008 Produce patterns and templates

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA008 Produce patterns and templates

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- produce three different patterns and three different templates for manufacturing parts or for assisting with fitting accessories.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to producing patterns and templates, including procedures for using sharp cutting tools and equipment
- types, characteristics, uses and limitations of pattern and template materials
- procedures for selecting most suitable mediums and materials for pattern and template design
- pattern and template production techniques and procedures
- tools, equipment and machinery to measure, mark out and produce patterns and templates
- procedures for using and applying jigs and fixtures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the patterns and templates that they have produced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- materials for producing automotive patterns and templates
- tools and equipment to measure, mark out and produce patterns and templates.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA009 Carry out mechanical pre-repair operations

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to prepare and clean mechanical components. It involves preparing for the task, cleaning and tagging equipment for repair or storage, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The pre-repair operations include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery or motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to undertake	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
pre-repair operations	1.2 Pre-repair procedures and information are sourced and interpreted 1.3 ***Cleaning options*** are analysed and selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment are selected and checked for serviceability
2. Clean and tag mechanical component prior to repair or storage	2.1 Component is cleaned according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to component or system 2.2 ***Cleaning materials*** and equipment are used according to manufacturer specifications and workplace procedures 2.3 Component is tagged and prepared for further repair procedures or treated with rust prevention material for storage 2.4 Used cleaning materials and waste materials are safely disposed of according to manufacturer specifications, workplace procedures, and safety and environmental requirements
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and component is presented ready for repair or storage 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace expectations 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking pre-repair and cleaning specifications and

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Skills	Description
	procedures • interpret instructions from cleaning agent information • interpret cleaning equipment operating procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation, including component identification tags.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate chemical mixing volumes and proportions from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• operate cleaning equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Cleaning options must include at least two of the following:	• steam cleaning • high pressure washing • manual washing • sand or bead blasting.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • operating cleaning equipment
	  • using hazardous chemicals
	  • selecting and using personal protective equipment (PPE), including safety glasses, gloves and protective clothing
	• environmental requirements, including procedures for trapping, storing and disposing of cleaning agents and residue released during the cleaning process.

Cleaning materials must include:	• chemical cleaning agents, including dewaxing, detergents, degreasers and special purpose agents • rust prevention material.

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Unit Mapping Information

Equivalent to AURTTA2009 Carry out pre-repair operations (mechanical)

Links

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Assessment Requirements for AURTTA009 Carry out mechanical pre-repair operations

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out mechanical pre-repair operations to three of the following vehicle components:
  - transmission
  - engine
  - steering and suspension system
  - final drive
  - wheels and hubs
  - chassis
  - hydraulic system
  - fuel system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to carrying out mechanical pre-repair operations, including procedures for:
  - operating cleaning equipment
  - using hazardous chemicals
  - selecting and using personal protective equipment (PPE), including safety glasses, gloves and protective clothing
- environmental requirements, including procedures for trapping, storing and disposing of cleaning agents and residue released during the cleaning process
- procedures for identifying and operating cleaning equipment, including:
  - steam cleaning

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  - high pressure washing
  - manual washing
  - sand or bead blasting
- types, application and safe handling of cleaning agents
- component cleaning procedures
- component dismantling procedures
- tagging and storage procedures for cleaned components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle components that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer cleaning agent specifications
- area and equipment, including PPE, for safely cleaning vehicle components
- vehicle components for pre-repair operations as specified in the performance evidence
- tools, equipment and materials appropriate for carrying out mechanical pre-repair operations.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA010 Service and repair trailers up to 4.5 tonnes

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to service and repair trailers with an aggregate trailer mass (ATM) of up to 4.5 tonnes. It involves servicing the suspension, brakes, axles, couplings and electrical systems, and completing workplace processes and documentation, including any associated recommendations for further action.

It applies to those working in the automotive service and repair industry. The trailers include those of agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to service and repair trailer up to 4.5 tonnes	1.1 Job requirements are determined from workplace instructions 1.2 Service, repair and adjustment procedures and information are sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect trailer to determine service and repair requirements	2.1 ***Inspection*** is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, and include recommendations for necessary repairs or adjustments
3. Carry out service and repair activities	3.1 Trailer service and repair requirements are determined from workplace instructions and inspection results 3.2 Service, repair and adjustments are carried out to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.3 Post-service and repair testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and trailer is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking trailer procedures and specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.

Numeracy skills to:	• measure trailer components and use basic mathematical operations, including addition and subtraction, to:
	  • calculate distances, tolerances and deviations from manufacturer specifications
	  • measure trailer and vehicle ride heights with rulers and tape measures
	• compare inspection findings to manufacturer specifications.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Inspection must include:	• vehicle hitch, trailer coupling and securing chains • electrical systems • brake system • chassis and suspension system • axles and wheel hubs • tyres.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting and supporting trailers
	  • handling and controlling brake dust and brake fluids
	  • working with stored energy.

Environmental requirements must include:	• procedures for trapping, storing and disposing of hazardous materials and substances released from braking systems, including lubricants, brake fluid, brake dust and fibres.

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Unit Mapping Information

Equivalent to AURTTA2010 Service and repair trailers up to 4.5 tonnes

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA010 Service and repair trailers up to 4.5 tonnes

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- service, repair and adjust two different trailers with an aggregate trailer mass (ATM) up to 4.5 tonnes, in which the work must involve:
  - repacking wheel bearings
  - inspecting and adjusting brakes
  - inspecting and servicing suspension
  - coupling and securing chains
  - inspecting vehicle hitch, trailer coupling and securing chains
  - inspecting and servicing electrical system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to servicing and repairing trailers up to 4.5 tonnes, including procedures for:
  - lifting and supporting trailers
  - handling and controlling brake dust and brake fluids
  - working with stored energy
- environmental requirements, including procedures for trapping, storing and disposing of hazardous materials and substances released from braking systems, including lubricants, brake fluid, brake dust and fibres
- identification, purpose and basic operation of trailer systems, including:
  - braking systems, including:
    - hydraulic

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    - electrical
    - mechanical
  - electrical wiring circuits
- trailer service and repair procedures, including:
  - wheel bearings
  - suspension system
  - braking system
  - lighting system
  - vehicle hitch and trailer coupling types and securing chains
  - 5th wheel trailer couplings
- post-service and repair testing procedures for trailers, including stationary and mobile performance tests.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the trailers that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer trailer specifications
- two different trailers with an ATM up to 4.5 tonnes requiring service and repair
- tools, equipment and materials appropriate for servicing and repairing trailers up to 4.5 tonnes.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA011 Install hydraulic systems to specified applications

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install hydraulic systems. It involves preparing for the task, installing and testing the operation of the hydraulic systems, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The hydraulic systems include those in agricultural machinery, heavy commercial vehicles or mobile plant machinery. Work involves installing hydraulic systems in vehicles or machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
hydraulic system	1.2 ***Hydraulic system*** installation procedures and information are sourced and interpreted 1.3 Installation options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Install hydraulic system	2.1 System is checked for correct application and components are checked for damage 2.2 System is installed according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to components or systems 2.3 Installed system is tested for correct operation and required adjustments are made according to manufacturer specifications, workplace procedures, and safety and environmental requirements 2.4 System is re-tested in normal operating conditions and final adjustments are made
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle or system is presented ready for use, including ensuring that protective guards, safety features and cowlings are in place 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking hydraulic system specifications and procedures • interpret hydraulic circuit installation procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting work performed and recording parts and material used.
Oral communication skills to:	• clarify instructions • report findings and make installation recommendations.
Numeracy skills to:	• measure hydraulic system components and use mathematical processes, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as rulers, vernier calipers and hydraulic pressure gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Hydraulic system must include:	• actuators • hoses, pipes fittings and couplings • control valves • arms and pads.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using raising, lowering and supporting equipment
	  • isolating and stabilising machines
	  • working with stored hydraulic pressure
	  • working with escaping high pressure oil
	• environmental requirements, including procedures for trapping, storing and disposing of fluid released from hydraulic systems.

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Unit Mapping Information

Equivalent to AURTTA3011 Install hydraulic systems to specified applications

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA011 Install hydraulic systems to specified applications

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- install one hydraulic system in vehicle or machinery to specified applications, including:
  - assembling hydraulic system
  - adjusting and testing hydraulic system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing hydraulic systems, including procedures for:
  - using raising, lowering and supporting equipment
  - isolating and stabilising machines
  - working with stored hydraulic pressure
  - working with escaping high pressure oil
- environmental requirements, including procedures for trapping, storing and disposing of fluid released from hydraulic systems.
- requirements of AS 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- requirements of Mechanical Design Guideline (MDG) 41 for Fluid Power Safety at Mines
- hydraulic system installation diagrams and schematics
- principles of hydraulic systems and components, including actuators, conductors, pressure flow and direction control systems
- identification, application and operation of hydraulic systems, including:
  - linear actuators

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  - rotary actuators
  - hoses, pipes fittings and couplings
  - control valves
  - arms and pads
- procedures for installing hydraulic systems in vehicles and machinery
- procedures for adjusting, tuning and testing the installation of hydraulic systems in vehicles or machinery.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the hydraulic systems that they have installed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer hydraulic system specifications and installation procedures
- hydraulic system for installation
- one vehicle or machinery requiring installation of hydraulic system
- AS 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- Mechanical Design Guideline (MDG) 41 Guideline for Fluid Power Safety at Mines
- tools, equipment and materials appropriate for installing hydraulic systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA012 Fabricate and install fluid power hose assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to fabricate and install fluid power hose assemblies. It involves preparing for the task, fabricating, installing and testing fluid power hoses according to relevant industry standards, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The hose assemblies include those of agricultural machinery, heavy commercial vehicles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to fabricate fluid power hose assembly	1.1 Job requirements are determined from workplace instructions 1.2 Fluid power hose fabrication procedures and information are sourced and interpreted 1.3 Options are analysed and selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment are selected and checked for serviceability
2. Fabricate assembly	2.1 Fluid power hose and fittings are identified and selected according to manufacturer specifications and workplace procedures 2.2 Fluid power hose is fabricated according to relevant industry standards, manufacturer specifications, workplace procedures, and ***safety and environmental requirements***
3. Install and test assembly	3.1 Procedures and information for hose installation are sourced and interpreted 3.2 Fluid power hose is installed and tested according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Test results are documented and reported according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret operating procedures from manufacturer and workshop literature for fabricating power hose crimping equipment • interpret information from manufacturer and workshop literature when seeking fluid power hose assembly specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording parts and material used.

Numeracy skills to:	• measure fluid power hose components
	• use mathematical processes, including addition, subtraction, multiplication and division, to calculate:
	  • distances, tolerances, pressures, force, and temperature
	  • deviations from manufacturer specifications
	• calculate and convert metric and imperial systems of measurement.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers and hydraulic pressure gauges • use fluid power hose crimping tool.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with fluids under pressure
	  • working with stored pressure hazards
	  • isolating and stabilising vehicle or machinery
	• environmental requirements, including procedures for trapping, storing and disposing of oil released from hydraulic hoses.

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Unit Mapping Information

Equivalent to AURTTA3012 Manufacture and install fluid power hose assemblies

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA012 Fabricate and install fluid power hose assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- fabricate, test and install fluid power hose assemblies, using both field attachable and crimp fittings, on two of the following:
  - single wire braid hose
  - double wire braid hose
  - spiral wire hose.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to fabricating and installing fluid power hose assemblies, including procedures for:
  - working with fluids under pressure
  - working with stored pressure hazards
  - isolating and stabilising vehicle or machinery
- environmental requirements, including procedures for trapping, storing and disposing of oil released from hydraulic hoses
- requirements of industry standards for hydraulic hoses and connectors, including:
  - MDG 41 Guideline for Fluid Power System Safety at Mines
  - ISO 6805 Rubber hoses and hose assemblies for underground mining
  - SAE J517 Hydraulic Hose
- application and purpose of hydraulic hoses, including:
  - hose sizes

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  - hose working pressures
  - hydraulic hoses, including:
  - fabric braid
  - single wire braid hose
  - double wire braid hose
  - spiral wire hose, including multi-spiral wire hose
  - crimped and swaged hose fittings
  - field attachable hose fittings
  - couplers, connectors and fittings
- fabrication procedures for fluid power hose assemblies
- testing procedures for fluid power hose assemblies
- installation procedures for fluid power hose assemblies, including routing of hydraulic hoses and pipes
- post-repair testing procedures for fluid power hose assemblies, including visual and performance tests.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the fluid power hose assemblies that they have fabricated and installed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer fluid power hose specifications
- MDG 41 Guideline for Fluid Power System Safety at Mines
- ISO 6805 Rubber hoses and hose assemblies for underground mining
- SAE J517 Hydraulic Hose
- test equipment for fluid power hose assemblies

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- vehicles or machinery requiring the installation of the fluid power hose assemblies specified in the performance evidence
- tools, equipment and materials appropriate for fabricating and installing fluid power hose assemblies, including a crimping machine.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA013 Diagnose and repair hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in hydraulic systems. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The hydraulic systems include those in heavy commercial vehicles, marine vessels or outdoor power equipment. This unit does not apply to agricultural or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
1. Prepare to diagnose and repair hydraulic system	1.1 Job requirements are determined from workplace instructions 1.2 ***Hydraulic system*** diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose hydraulic system	2.1 ***Diagnostic tests*** are carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair hydraulic system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and system is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking hydraulic system specifications and procedures. • interpret hydraulic symbols and circuits on hydraulic system components.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.

Numeracy skills to:	• measure hydraulic system components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate:
	  • distances, tolerances and deviations from manufacturer specifications
	  • hydraulic system pressures, forces, distances and temperature
	• read precision measuring equipment, including micrometers, vernier calipers, and flow, temperature and pressure gauges.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment • use pressure gauges or flow meters.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Hydraulic system must include:	• reservoirs • pumps • valves • actuators • motors • filters • hoses, pipes, fittings and couplings.
Diagnostic tests must include:	• using pressure gauges and/or flow meters.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using raising, lowering and supporting equipment
	  • working with fluids under pressure
	  • working with stored pressure hazards
	  • working with hot fluid hazards
	  • isolating and stabilising machines or vehicles
	• environmental requirements, including procedures for trapping, storing and disposing of fluid released from hydraulic systems.

Unit Mapping Information

Equivalent to AURTTA3013 Repair hydraulic systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA013 Diagnose and repair hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in two different hydraulic systems, in which the work must involve removing and refitting or replacing three of the following:
  - hydraulic cylinder
  - hydraulic pump
  - hydraulic motor
  - hydraulic valves
  - hydraulic hose.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing hydraulic systems, including procedures for:
  - using raising, lowering and supporting equipment
  - working with fluids under pressure
  - working with stored pressure hazards
  - working with hot fluid hazards
  - isolating and stabilising machines or vehicles
- environmental requirements, including procedures for trapping, storing and disposing of fluid released from hydraulic systems
- operating principles of hydraulic systems and associated components, including:
  - transmission of energy by hydraulic fluid
  - mechanical advantage

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  - hydraulic circuits, including open and closed centred systems
  - temperature, force, pressure, area and flow
- application, purpose and operation of hydraulic systems and components, including:
  - reservoirs
  - accumulators
  - pumps, including gear and piston
  - valves, including directional, pressure and flow
  - hand and remote cordless controls
  - linear and rotary actuators
  - hoses, pipes fittings and couplings
  - heat exchangers
  - hydraulic fluids
  - hydraulic symbols and system schematic
- requirements of AS 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- diagnostic testing procedures for hydraulic systems, including:
  - applying and using a flow meter to diagnose faults by carrying out an in-line, bypass or ‘Tee’ test to evaluate system components
  - visually inspecting hoses, pipes and connectors
  - oil sampling and contamination control
- repair procedures for hydraulic systems, including procedures for removing, repairing, replacing and adjusting hydraulic system components
- post-repair testing procedures for hydraulic systems, including procedures for testing:
  - operational functionality
  - fluid pressures and levels.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the hydraulic systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer hydraulic system specifications
- two hydraulic systems with faults in the components specified in the performance evidence
- diagnostic tools and equipment for hydraulic systems, including pressure gauges or flow meters
- AS 1101.1 Graphic symbols for general engineering, Part 1: Hydraulic and pneumatic systems
- tools, equipment and materials appropriate for repairing and adjusting hydraulic systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA014 Assemble and install pneumatic system components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to assemble and install pneumatic system components. It involves preparing for the task, assembling and installing pneumatic system components, performing post-assembly testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The pneumatic systems include those of agricultural machinery, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to assemble, install and test pneumatic system components	1.1 Job requirements are determined from workplace instructions 1.2 Assembly, installation and test procedures and information are sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.3 Tools and equipment are selected and checked for serviceability
2. Carry out assembly and installation activities	2.1 Pneumatic system components are assembled according to job requirements 2.2 Components are installed according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.3 Components are adjusted according to manufacturer specifications and workplace procedures, and without causing damage to components or system
3. Test pneumatic system	3.1 Testing procedures and information are sourced and interpreted from manufacturer procedures and specifications 3.2 System tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Post-assembly testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and pneumatic system is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking pneumatic system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording parts and material used.
Oral communication skills to:	• clarify workplace instructions and determine job requirements • gain information from appropriate persons and assistance as required.
Numeracy skills to:	• measure pneumatic system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • understand measuring and test equipment divisions.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use pneumatic pressure gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for dealing with stored pressure hazards • environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from the system.

Unit Mapping Information

Equivalent to AURTTA3014 Assemble and install pneumatic systems and components

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA014 Assemble and install pneumatic system components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- assemble and install two different pneumatic system components, in which the work must involve adjusting and testing the installed pneumatic system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to relating to assembling and installing pneumatic systems, including procedures for dealing with stored pressure hazards
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from the system
- types and applications of pneumatic systems
- types, application and operation of pneumatic system components, including:
  - compressors
  - linear actuators
  - rotary actuators
  - drive motors
  - lines, hoses and couplings
  - control valves
- pneumatic system assembly and installation procedures
- key features of pneumatic system schematic diagrams and symbols
- key features of engineering drawings relating to pneumatic systems
- post-installation testing procedures.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the pneumatic system components that they have assembled and installed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer pneumatic system specifications
- two different vehicles or machinery requiring the installation of pneumatic systems
- test equipment for pneumatic systems
- tools, equipment and materials appropriate for assembling and installing pneumatic system components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA015 Produce engineering drawings for vehicle components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to produce engineering drawings for manufacturing or modifying vehicle components. It involves preparing for the task, producing engineering drawings, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to produce engineering drawing	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.2 Vehicle component or item to be drawn is identified 1.3 Information for proposed engineering drawing content is located and interpreted
2. Produce engineering drawing	2.1 Drawing instruments, equipment and materials are selected and prepared 2.2 Required engineering ***drawing*** is produced to specifications and quality standards 2.3 Engineering drawing is completed and checked for accuracy according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure drawing is to workplace expectations and ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Drawing and workplace documentation are processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret engineering plans and specifications • interpret technical information and terminology relating to engineering drawings.
Writing skills to:	• produce engineering drawings using symbols, codes, legends and diagrammatic representations • legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Numeracy skills to:	• measure components and use basic mathematical operations, including addition, subtraction, multiplication and division, to

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Skills	Description
	draw components to scale • interpret engineering drawing specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use drawing tools and equipment for production of engineering drawings.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Drawing must include:	• correct symbols and codes • legends and diagrammatic representations • dimensions, tolerances and material specifications.

Unit Mapping Information

Equivalent to AURTTA3015 Prepare engineering drawings

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA015 Produce engineering drawings for vehicle components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- produce engineering drawings covering the manufacture or modification of three different vehicle components using hand and computer-aided drawing (CAD) equipment.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- engineering drawing techniques and procedures, including:
  - hand drawing
  - computer-aided drawing
- engineering drawing terminology, symbols, codes, legends and diagrammatic representations
- quality standards for producing, maintaining and storing engineering drawings
- procedures for recording, reporting and maintaining engineering plans, workplace records and information.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engineering drawings of vehicle components that they have produced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- work instructions, including drawing specifications and dimensions
- material relevant to the production of engineering drawings
- drawing tools and CAD equipment appropriate for producing engineering drawings of vehicle components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA017 Carry out vehicle safety inspections

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out a vehicle safety inspection, compare findings with manufacturer specifications, and report those findings. It involves preparing for the task, carrying out a vehicle safety inspection, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to carry out a vehicle safety	1.1 Job requirements are determined from workplace instructions 1.2 Vehicle safety inspection procedures and information are sourced

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
inspection	and interpreted 1.3 Vehicle safety inspection options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment are selected and checked for serviceability
2. Complete vehicle safety inspection	2.1 Vehicle safety inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements***, and without causing damage to any components or system 2.2 Vehicle components are compared to manufacturer specifications, and vehicle system tolerances outside vehicle manufacturer specifications are highlighted 2.3 Vehicle safety inspection report is completed according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workplace literature when seeking vehicle specifications and safety inspection procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation,

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Skills	Description
	including vehicle safety inspection reports.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• measure vehicle components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use measuring equipment, such as vernier calipers, micrometers and dial indicators.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for lifting and supporting vehicles.

Unit Mapping Information

Equivalent to AURTTA3017 Carry out vehicle safety and roadworthy inspections

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA017 Carry out vehicle safety inspections

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out the safety inspections of three different vehicles
- produce separate vehicle safety reports relating to the above inspections.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational, health and safety (OHS) requirements relating to carrying out vehicle safety inspections, including procedures for lifting and supporting vehicles
- methods for sourcing vehicle specifications
- vehicle and component safety inspection procedures
- types of vehicle safety inspection reports.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have inspected, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- vehicle manufacturer specifications
- three different vehicles requiring safety inspections
- tools and equipment for carrying out vehicle safety inspections.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA018 Carry out diagnostic procedures

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out diagnostic procedures on vehicles, vessels or machinery. It involves confirming the existence of a fault, choosing the appropriate diagnostic procedure and tools, applying the diagnostic procedure, and reporting conclusions.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose faults	1.1 Job requirements are determined from workplace instructions and existence of fault is confirmed according to workshop procedures

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.2 Information, including customer complaint, is sourced and analysed and systems and components to be tested are identified 1.3 Testing strategy is developed to most efficiently find the faults 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety and environmental requirements*** 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose faults	2.1 Diagnostic tools and equipment are applied according to manufacturer specifications, workplace procedures and safety requirements 2.2 Diagnostic tests are carried out without causing damage to diagnostic tools and equipment or vehicle systems or components 2.3 Identification of faults is confirmed from test results and reported according to workplace procedures 2.4 Faulty components are examined and ***cause of faults*** is determined, including recommendations for repair
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready to be repaired or returned to the customer 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently • apply diagnostic procedures to different vehicles or machinery.

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Skills	Description
Reading skills to:	• research, organise and interpret technical information from manufacturer and workshop literature when seeking specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations.
Oral communication skills to:	• clarify instructions, obtain information from customers and supervisors, and report diagnostic findings.
Numeracy skills to:	• measure components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as micrometers and vernier calipers • use specialised diagnostic equipment, such as scan tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working safely with the system being tested • environmental requirements, including procedures for complying with requirements specific to the system being tested.
Cause of faults must include:	• determining the reason the fault developed.

Unit Mapping Information

Equivalent to AURTTA3018 Carry out diagnostic procedures

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA018 Carry out diagnostic procedures

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- follow workplace diagnostic procedures to diagnose faults in three different vehicles or machinery
- the above diagnosis work must involve two of the following types of faults:
  - loss of vehicle power
  - excessive fuel consumption
  - excessive emissions
  - poor handling
  - poor hydraulic system performance
  - poor pneumatic system performance
  - incorrect mechanical system performance
  - incorrect electrical system performance
  - vibration
  - abnormal noise
- record the diagnostic procedures followed with the above vehicles or machinery and identify the cause or causes of faults.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to carrying out diagnostic procedures, including procedures for working safely with the system being tested

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- environmental requirements, including procedures for complying with requirements specific to the system being tested
- methods of gathering information, including questioning customers and effective questioning techniques
- types and applications of diagnostic strategies, including:
  - strategy-based diagnostics
  - flow charts
  - diagnosis charts
- types, applications, limitations and operation of common diagnostic tools
- methods of differentiating between fault symptoms and fault causes.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles or machinery in which they have diagnosed faults, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions detailing customer fault complaint
- manufacturer vehicle or machinery specifications
- three different vehicles or machinery with system faults specified in the performance evidence
- tools, equipment and materials required for diagnosing system faults.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA020 Apply heat induction processes

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to apply heat using induction processes when repairing vehicle chassis and components. It involves preparing for the task, selecting and using specialist tools and equipment, identifying damage, operating heat induction equipment according to manufacturer specifications, completing repairs to original equipment manufacturer (OEM) or authorised agency's specifications, and completing workplace processes and documentation.

It applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to apply heat induction processes in repairs of vehicle chassis and components	1.1 Job requirements are determined from workplace instructions 1.2 ***Repair information*** is accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment, including personal protective equipment (PPE), are selected and inspected for serviceability 1.5 Work area is prepared and work planned in line with job requirements, heating sequence, and workplace procedures
2. Carry out heat induction processes	2.1 Heat induction settings are identified and adjusted, and equipment is operated according to OEM or authorised agency specifications and workplace procedures 2.2 ***Induction heating activities*** to repair damaged chassis and components are completed according to OEM or authorised agency specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to workplace equipment, vehicle systems or other components
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Equipment maintenance activities are completed according to workplace procedures and equipment manufacturer specifications 3.5 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• ask questions to clarify instructions and procedures • clearly report issues, defects and outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate heat induction settings • interpret numerical information correctly in specifications and record accurately in forms or workplace documents.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Self-management skills to:	• select and use appropriate equipment, materials and processes for applying heat induction in repair processes.
Problem solving skills to:	• identify heat induction risk factors and take corrective action.
Technology skills to:	• use heat induction equipment correctly and safely.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Repair information must include:	• OEM or authorised agency's specifications • workplace procedures.
Induction heating activities must include the use of:	• metal colours • heat crayons • thermal temp gun.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist heat induction equipment
	  • identifying workplace hazards
	• environmental requirements including procedures for trapping, storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURTTA3020 Apply heat-induction processes

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA020 Apply heat induction processes

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- apply heat induction processes to three different chassis and component repairs, in which the work must involve the use of:
  - metal colours
  - heat crayons
  - thermal temp gun.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to applying heat induction processes, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist heat induction equipment
  - identifying workplace hazards
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- heat induction process and procedures, including:
  - use of heat induction in repairs
  - use of heat induction equipment, including:
    - metal colours
    - heat crayons
    - thermal temp gun

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- original equipment manufacturer (OEM) or authorised agency specifications and recommended repair procedures
- material types suitable for applying heat induction processes
- problem-solving techniques relating to addressing repair defects
- final inspection procedures
- work area clean-up and maintenance requirements
- procedures for completing workplace documentation.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having used heat induction equipment to repair vehicle chassis, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required to use heat induction equipment
- OEM or authorised agency repair procedures
- heat induction equipment and operating instructions
- three different damaged vehicle chassis and components requiring heat induction repairs
- tools and equipment appropriate for applying heat induction processes.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA021 Diagnose complex system faults

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose faults in complex vehicle, vessels or machinery systems to determine the repair action necessary to restore system performance. It involves confirming the existence of a complex system fault, choosing the required diagnostic procedure and tools, applying the diagnostic procedure, reporting conclusions, and making repair recommendations.

A complex system integrates two or more automotive systems, or incorporates three or more mechanical, hydraulic, pneumatic, electrical or electronic sub-systems. Examples include electronically controlled automatic transmissions, anti-lock braking systems, and engine management systems integrating ignition, fuel and transmission control systems.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm work requirement regarding complex system fault	1.1 Nature and objective of diagnosis requirements are determined from workplace instructions 1.2 Existence of fault is confirmed from direct or indirect evidence 1.3 Information, including customer complaint, is sourced to provide a full overview of all faults and conditions under which they occur
2. Analyse information	2.1 Function and operation of the system when operating correctly are identified 2.2 Information is analysed and affected systems are identified 2.3 Manufacturer specifications and other technical information are accessed and interpreted 2.4 Tests are identified and selected from range of available options, and testing sequence is established 2.5 Testing equipment is obtained and prepared according to manufacturer specifications and workplace procedures 2.6 Tools, equipment and materials required to support the diagnostic process are identified, selected and prepared for use 2.7 Hazards associated with the work are identified and risks are managed according to workplace procedures and ***safety requirements***
3. Perform diagnosis	3.1 Tests are applied systematically and efficiently to gather precise data on system operation according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.2 Test results are compared with manufacturer specifications and conclusions are drawn and documented according to workplace procedures, including recommendations for necessary repairs 3.3 Diagnostic findings are verified, as required, by using reliable alternative or optional process according to manufacturer specifications and workplace procedures 3.4 Conclusions are provided to appropriate personnel or customer to confirm further action to be taken
4. Complete work processes	4.1 Vehicle or machinery is presented ready to be repaired or returned to the customer 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to

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Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• research, organise and interpret technical information from manufacturer and workshop literature when seeking specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings and making repair recommendations.
Oral communication skills to:	• clarify instructions, gain information from customers and supervisor, report diagnostic findings, and make repair recommendations.
Numeracy skills to:	• measure components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as micrometers and vernier calipers • use specialised integrated system diagnostic equipment, such as scan tools.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements for working safely with the vehicle systems being tested, including procedures for: • selecting and using personal protective equipment (PPE) • using tools and equipment.

Unit Mapping Information

Equivalent to AURTTA4021 Carry out diagnosis of complex system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA021 Diagnose complex system faults

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose complex system faults on three different vehicles, machinery or vessels
- the above diagnosis must involve two of the following types of complex faults:
  - one fault that is in a complex system that integrates two or more automotive systems
  - one fault that incorporates three or more mechanical, hydraulic, pneumatic, electrical or electronic sub-systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing complex system faults in vehicles, vessels or machinery, including working safely with the systems being tested, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and equipment
- types, application and operation of complex systems, including:
  - systems that integrates two or more automotive systems
  - systems that incorporate three or more mechanical, hydraulic, pneumatic, electrical or electronic sub-systems
- diagnostic procedures for complex systems, including stages within the diagnostic procedure
- methods of gathering information on complex system faults, including customer questioning techniques
- types and applications of diagnostic flow charts

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- types, applications, limitations and operation of diagnostic tools, including:
  - multimeters
  - scan tools, including:
    - diagnosis trouble codes (DTC) and the conditions that caused the code to be set
    - live data
    - snap shots
  - oscilloscopes
  - mechanical, hydraulic and pneumatic test equipment
- methods of differentiating between fault symptoms and fault cause.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle or machinery complex system faults that they have diagnosed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer system specifications
- three different vehicles, vessels or machinery that have the complex system faults specified in the performance evidence
- tools, equipment and materials appropriate for diagnosing complex system faults in vehicles, vessels or machinery.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA022 Develop and apply mechanical system modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to develop, apply and validate significant modifications to existing mechanical systems in order to vary or enhance performance. It involves identifying the modification requirement, developing the modification specifications, applying and testing the modification, and completing workplace processes and documentation.

Significant and non-routine modifications are those that require compliance with Australian Design Rules and Vehicle Safety Bulletins.

It applies to those working in the automotive service and repair industry. The mechanical systems include those of agricultural machinery, bicycles, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the modification requirement	1.1 Job requirements are determined from workplace instructions 1.2 Reasons for the modification are identified and confirmed with appropriate persons 1.3 Modification options are identified and presented to appropriate persons according to workplace procedures 1.4 Hazards associated with the work are identified and risks are managed 1.5 Legal and safety impacts of the modification are considered, as required, according to regulatory requirements
2. Develop and validate the modification specification	2.1 Manufacturer specifications for the existing mechanical system are sourced and interpreted 2.2 Criteria for selecting the modification method and evaluating the outcomes are identified and documented 2.3 Proposed modification method is identified, selected and evaluated from available options 2.4 Selected option, including material choices and processes, is developed in detail and progressively assessed against established criteria 2.5 Modification specification is documented according to workplace procedures
3. Apply and test the modification specification	3.1 Tools, test equipment and materials required to support the modification procedure are identified, selected and prepared for use 3.2 Selected modification method is carried out according to workplace procedures and ***safety requirements*** 3.3 Post-modification testing is carried out according to workplace procedures to confirm modification outcomes are as intended, and any problems detected as having been introduced during the modification process are rectified 3.4 Test results and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.5 Variations needed during the modification process or as a result of testing are incorporated into the modification specification 3.6 Information and detail relating to the modification are documented and provided to the appropriate parties according to regulatory and commercial obligations
4. Complete work	4.1 Final inspection is made to ensure work is to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
processes	expectations 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate and evaluate appropriate sources of information.
Reading skills to:	• interpret the operating and testing procedures for mechanical system testing equipment from workplace and manufacturer literature • research, organise and interpret technical information from manufacturer and workshop literature when seeking mechanical system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting modification findings and recording parts and material used.
Oral communication skills to:	• clarify instructions, gain information from supervisors, and report modification outcomes.
Numeracy skills to:	• measure mechanical system components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications • interpret precision measuring equipment and test equipment units and scales.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

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Skills	Description
Technology skills to:	• use precision measuring equipment, such as micrometers and vernier calipers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for using personal protective equipment (PPE) and hand tools.

Unit Mapping Information

Equivalent to AURTTA5022 Develop and apply mechanical system modifications

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA022 Develop and apply mechanical system modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- develop and apply one of the following significant and non-routine modifications on the mechanical system of two different vehicles, vessels, machinery or equipment:
  - adapt or modify mechanical system to a significantly changed capability
  - adapt mechanical system for different work conditions
  - modify or install a significant mechanical system for a special purpose.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to developing and applying mechanical system modifications, including procedures for using personal protective equipment (PPE) and hand tools
- principles and processes involved in planning and implementing modifications to mechanical systems
- principles and processes involved in planning and implementing modifications to mechanical systems
- types, functions, operation and limitations of mechanical systems being modified
- types, functions, operation and limitations of diagnostic testing equipment required for mechanical system modifications
- requirements of Australian Design Rules (ADRs) and Vehicle Safety Bulletins (VSBs) relating to mechanical system modifications
- procedures for documenting and reporting the modification specifications and outcomes.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mechanical systems that they have modified, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer mechanical system specifications
- ADRs and VSBs relating to mechanical system modifications
- two different vehicles, vessels, machinery or equipment requiring mechanical system modification
- testing equipment for mechanical system modification
- tools, equipment and materials appropriate for completing mechanical system modifications.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA023 Develop and apply hydraulic system modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to develop, apply and validate significant modifications to existing hydraulic systems in order to vary or enhance performance. It involves identifying the modification requirement, developing the modification specifications, applying and testing the modification, and completing workplace processes and documentation.

Significant and non-routine modifications are those that require compliance with Australian Design Rules and Vehicle Safety Bulletins.

It applies to those working in the automotive service and repair industry. The hydraulic systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the modification requirement	1.1 Job requirements are determined from workplace instructions 1.2 Reasons for the modification are identified and confirmed with appropriate persons 1.3 Modification options are identified and presented to appropriate persons according to workplace procedures 1.4 Hazards associated with the work are identified and risks are managed 1.5 Legal and safety impacts of the modification are considered, as required, according to regulatory requirements
2. Develop and validate the modification specification	2.1 Manufacturer specifications for the existing hydraulic system are sourced and interpreted 2.2 Criteria for selecting the modification method and evaluating the outcomes are identified and documented 2.3 Proposed modification method is identified, selected and evaluated from available options 2.4 Selected option, including material choices and processes, is developed in detail and progressively assessed against established criteria 2.5 Modification specification is documented according to workplace procedures
3. Apply and test the modification specification	3.1 Tools, test equipment and materials required to support the modification procedure are identified, selected and prepared for use 3.2 Selected modification method is carried out according to workplace procedures, and ***safety and environmental requirements*** 3.3 Post-modification testing is carried out according to workplace procedures to confirm modification outcomes are as intended, and any problems detected as having been introduced during the modification process are rectified 3.4 Test results and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.5 Variations needed during the modification process or as a result of testing are incorporated into the modification specification 3.6 Information and detail relating to the modification are documented and provided to the appropriate parties according to regulatory and commercial obligations

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate and evaluate appropriate sources of information.
Reading skills to:	• interpret the operating and testing procedures for hydraulic system testing equipment from workplace and manufacturer literature • research, organise and interpret technical information from manufacturer and workshop literature when seeking hydraulic system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting modification findings and recording parts and material used.
Oral communication skills to:	• clarify instructions, gain information from supervisors, and report modification outcomes.
Numeracy skills to:	• measure hydraulic system components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications • interpret precision measuring equipment and test equipment units and scales.
Planning and organising	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed

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Skills	Description
skills to:	within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as micrometers and vernier calipers • use specialised testing equipment, such as flow and pressure gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for dealing with high pressure fluid systems • environmental requirements, including procedures for trapping, storing and disposing of fluids released from hydraulic systems.

Unit Mapping Information

Equivalent to AURTTA5023 Develop and apply hydraulic system modifications

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA023 Develop and apply hydraulic system modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- develop and apply one of the following significant and non-routine modifications on the hydraulic system of two different vehicles, vessels, machinery or equipment:
  - adapt or modify hydraulic system to a significantly changed capability
  - adapt hydraulic system for different work conditions, for example high altitude or underground mine
  - modify or install a significant hydraulic system for a special purpose.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to developing and applying hydraulic system modifications, including procedures for dealing with high pressure fluid systems
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from hydraulic systems
- principles and processes involved in planning and implementing modifications to hydraulic systems
- types, functions, operation and limitations of hydraulic systems being modified
- types, functions, operation and limitations of diagnostic testing equipment required for hydraulic system modifications, including flow and pressure gauges
- requirements of Australian Design Rules (ADRs) and Vehicle Safety Bulletins (VSBs) relating to hydraulic system modifications
- procedures for documenting and reporting the modification specifications and outcomes.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the hydraulic systems that they have modified, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer hydraulic system specifications
- ADRs and VSBs relating to hydraulic system modifications
- two different vehicles, vessels, machinery or equipment requiring hydraulic system modification
- testing equipment for hydraulic system modification
- tools, equipment and materials appropriate for completing hydraulic system modifications.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA024 Develop and apply pneumatic system modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to develop, apply and validate significant modifications to existing pneumatic systems in order to vary or enhance performance. It involves identifying the modification requirement, developing the modification specifications, applying and testing the modification, and completing workplace processes and documentation.

Significant and non-routine modifications are those that require compliance with Australian Design Rules and Vehicle Safety Bulletins.

It applies to those working in the automotive service and repair industry. The pneumatic systems include those of agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the modification requirement	1.1 Job requirements are determined from workplace instructions 1.2 Reasons for the modification are identified and confirmed with appropriate persons 1.3 Modification options are identified and presented to appropriate persons according to workplace procedures 1.4 Hazards associated with the work are identified and risks are managed 1.5 Legal and safety impacts of the modification are considered, as required, according to regulatory requirements
2. Develop and validate the modification specification	2.1 Manufacturer specifications for the existing pneumatic system are sourced and interpreted 2.2 Criteria for selecting the modification method and evaluating the outcomes are identified and documented 2.3 Proposed modification method is identified, selected and evaluated from available options 2.4 Selected option, including material choices and processes, is developed in detail and progressively assessed against established criteria 2.5 Modification specification is documented according to workplace procedures
3. Apply and test the modification specification	3.1 Tools, test equipment and materials required to support the modification procedure are identified, selected and prepared for use 3.2 Selected modification method is carried out according to workplace procedures and ***safety requirements*** 3.3 Post-modification testing is carried out according to workplace procedures to confirm modification outcomes are as intended, and any problems detected as having been introduced during the modification process are rectified 3.4 Test results and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.5 Variations needed during the modification process or as a result of testing are incorporated into the modification specification 3.6 Information and detail relating to the modification are documented and provided to the appropriate parties according to regulatory and commercial obligations
4. Complete work	4.1 Final inspection is made to ensure work is to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
processes	expectations 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate and evaluate appropriate sources of information.
Reading skills to:	• interpret the operating and testing procedures for pneumatic system testing equipment from workplace and manufacturer literature • research, organise and interpret technical information from manufacturer and workshop literature when seeking pneumatic system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting modification findings and recording parts and material used.
Oral communication skills to:	• clarify instructions, gain information from supervisors, and report modification outcomes.
Numeracy skills to:	• measure pneumatic system components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications • interpret precision measuring equipment and test equipment units and scales.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as micrometers and

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Skills	Description
	vernier calipers • use specialised testing equipment, such as air pressure gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • working with high air pressure hazards • dealing with stored air pressure hazards.

Unit Mapping Information

Equivalent to AURTTA5024 Develop and apply pneumatic system modifications

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA024 Develop and apply pneumatic system modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- develop and apply one of the following significant and non-routine modifications on the pneumatic system of two different vehicles or machinery:
  - adapt or modify pneumatic system to a significantly changed capability
  - adapt pneumatic system for different work conditions
  - modify or install a significant pneumatic system for a special purpose.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to developing and applying pneumatic system modifications, including procedures for:
  - working with high air pressure hazards
  - dealing with stored air pressure hazards
- principles and processes involved in planning and implementing modifications to pneumatic systems
- types, functions, operation and limitations of pneumatic systems being modified
- types, functions, operation and limitations of diagnostic testing equipment required for pneumatic system modifications, including meters, gauges, and load and pressure testing devices
- requirements of Australian Design Rules (ADRs) and Vehicle Safety Bulletins (VSBs) relating to pneumatic system modifications
- procedures for documenting and reporting the modification specifications and outcomes.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to pneumatic systems that they have modified, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer pneumatic system specifications
- ADRs and VSBs relating to pneumatic system modifications
- two different vehicles or machinery requiring pneumatic system modification
- testing equipment for pneumatic system modification
- tools, equipment and materials appropriate for completing pneumatic system modifications.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTA026 Diagnose complex faults in electronic over hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose complex faults in electronic over hydraulic systems and determine the repair action necessary to restore system performance. It involves confirming the existence of a fault, choosing the diagnostic procedure and tools, applying the diagnostic procedure, reporting conclusions and making repair recommendations.

Complex faults are outside the normal scope of a technician's diagnosis and repair work. They include intermittent faults, multi-system faults, faults introduced as a result of system repairs, and indirect faults caused by the influence of external systems, requiring the application of complex diagnostic processes to resolve.

It applies to those working in the automotive service and repair industry. The electronic over hydraulic systems include those of agricultural machinery, heavy commercial vehicles, marine vessels or mobile plant machinery, which may be wheeled or track type machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Nature and objective of diagnosis requirements are determined from workplace instructions 1.2 Existence of fault in electronic over hydraulic system is confirmed from direct or indirect evidence 1.3 Hazards associated with the work are identified and risks are managed according to workplace procedures, and ***safety and environmental requirements***
2. Prepare to carry out diagnosis	2.1 Manufacturer specifications and other technical information for electronic over hydraulic system are accessed and interpreted 2.2 Diagnostic procedures and options are identified 2.3 Diagnostic method sequence, tests and testing processes are selected from the range of available options 2.4 Testing equipment is selected and prepared according to manufacturer specifications and workplace procedures 2.5 Tools, equipment and materials required to support the diagnostic process are identified, selected and prepared for use
3. Apply diagnostic procedures	3.1 Selected diagnostic process is followed and testing is carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.2 Diagnostic findings are confirmed, as required, by using reliable alternative or optional process according to manufacturer specifications and workplace procedures 3.3 Conclusions are drawn from findings and documented according to workplace procedures, including recommendations for necessary repairs 3.4 Conclusions are provided to appropriate personnel or customer to confirm further action to be taken
4. Complete work processes	4.1 Vehicle is presented ready to be repaired or returned to the customer 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate and evaluate appropriate sources of information efficiently • apply diagnostic skills to different systems.
Reading skills to:	• research, organise and interpret technical information from manufacturer and workshop literature when seeking electronic over hydraulic system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, gain information from customers and supervisors, report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure electronic over hydraulic system components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised diagnostic equipment, such as scan tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with high pressure fluid systems • environmental requirements, including procedures for trapping, storing and disposing of fluids released from hydraulic systems.

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Unit Mapping Information

Equivalent to AURTTA4026 Diagnose complex faults in vehicle electric-over-hydraulic systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTA026 Diagnose complex faults in electronic over hydraulic systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose a complex fault in three different electronic over hydraulic systems
- the above diagnosis must involve two of the following types of complex faults:
  - an intermittent fault
  - a fault that affects more than one system
  - a fault introduced as a result of a system repair
  - an indirect fault caused by the influence of external systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing complex faults in electronic over hydraulic systems, including procedures for working with high pressure fluid systems
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from hydraulic systems
- types of complex faults relating to electronic over hydraulic systems, including:
  - intermittent
  - multi-system
  - introduced as a result of system repair
  - indirect, caused by the influence of external systems
- types, functions, operation and limitations of electronic over hydraulic systems and components, including:
  - input sensors

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    - output actuators
    - computer systems
- testing procedures for different electronic over hydraulic systems, including:
    - electronic control analysis
    - component wear analysis
    - system operation analysis
- types, functions, operation and limitations of diagnostic testing equipment required to diagnose complex faults in different electronic over hydraulic systems, including:
    - scan tools
    - vacuum gauges
    - oil pressure gauges
- procedures for accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs), including:
        - conditions that set the DTCs
        - conditions for running DTCs
    - live data
    - freeze frame data
    - waveforms
    - vehicle continuous and non-continuous monitored systems
- methods and processes for documenting and reporting diagnostic findings and recommendations.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the electronic over hydraulic systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

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- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer electronic over hydraulic system specifications
- three different electronic over hydraulic systems with complex faults
- electronic over hydraulic system diagnostic equipment, including:
  - scan tool
  - vacuum gauge
  - oil pressure gauge
- tools, equipment and materials appropriate for diagnosing complex faults in electronic over hydraulic systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTB001 Inspect and service braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service braking systems according to manufacturer specifications. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The braking systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, motorcycles, mobile plant machinery, outdoor power equipment or trailers. The braking systems may be hydraulic, air over hydraulic, air, mechanical, or hand and parking braking systems.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Brakes

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service braking system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect braking system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service braking system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 ***Post-service testing*** is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to braking systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection finding and make repair recommendations.
Numeracy skills to:	• measure brake components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • interpret measuring equipment scales.
Technology skills to:	• use measuring equipment, such as vernier calipers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting and supporting vehicles or machinery
	  • managing and controlling brake dust and brake fluids
	• environmental requirements, including procedures for trapping, storing and disposing of brake dust and brake fluid released from braking systems.

Post-service testing must include**:**	• static and dynamic testing of braking system.

Unit Mapping Information

Equivalent to AURTTB2001 Inspect and service braking systems

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTB001 Inspect and service braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the braking systems of two different vehicles or machinery, including:
  - disc braking systems
  - drum braking systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing braking systems, including procedures for:
  - lifting and supporting vehicles or machinery
  - managing and controlling brake dust and brake fluids
- environmental requirements, including procedures for trapping, storing and disposing of brake dust and brake fluid released from braking systems
- identification and function of major braking components, including:
  - discs, pads and calipers
  - drums, brake linings, wheel cylinders and hydraulic components
  - master cylinder
  - hydraulic and vacuum brake booster
  - diesel engine vacuum brake booster pump
  - electric and manual park braking systems
- basic operation of braking systems, including:
  - hydraulic braking systems

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  - mechanical braking systems
  - air over hydraulic systems
  - air braking systems
- types, applications and testing of brake hydraulic fluids
- inspection procedures for braking system components, including:
  - component wear analysis
  - brake fluid testing
- service and adjustment procedures for braking systems, including:
  - brake bleeding
  - brake adjustment
  - park brake adjustment
- post-service testing procedures for braking systems, including static and dynamic testing.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer braking system specifications
- two different vehicles or machinery with disc and drum braking systems requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing braking systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTB004 Inspect and service air braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service air braking systems according to manufacturer specifications. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The air braking systems include those of agricultural machinery, heavy commercial vehicles or mobile plant machinery.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Brakes

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service air braking system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect air braking system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service air braking system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to ***components*** or systems 3.2 ***Post-service testing*** is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking inspection and service procedures and specifications relating to air braking systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• measure brake components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • interpret measuring equipment scales.
Technology skills to:	• use precision measuring equipment, such as vernier calipers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • managing and controlling brake dust
	  • working with stored energy
	• environmental requirements, including procedures for trapping, storing and disposing of brake dust released from air braking systems.

Components must include:	• air compressor, filters, air drier, receivers and tanks • drive belts • spring brake chambers, hoses and adjusters • discs, pads, drums and linings • brake valves • brake lights

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	• trailer brake valves.
Post-service testing must include:	• static and dynamic testing of braking system.

Unit Mapping Information

Equivalent to AURTTB2004 Inspect and service air braking systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTB004 Inspect and service air braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the air braking systems of two different vehicles or machinery, including:
  - one air disc braking system
  - one air drum braking system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing air braking systems, including procedures for:
  - managing and controlling brake dust
  - working with stored energy
- environmental requirements, including procedures for trapping, storing and disposing of brake dust released from air braking systems
- identification and function of major air braking components, including:
  - air compressor, filters, air drier, receivers and tanks
  - drive belts
  - spring brake chambers, hoses and adjusters
  - discs, pads, drums and linings
  - brake valves
  - brake lights
  - trailer brake valves
- basic operation of air braking systems, including:

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  - mechanical
  - pneumatic
- inspection procedures for air braking systems, including:
  - component wear analysis
  - air system assessment
- service and adjustment procedures for air braking systems, including:
  - brake adjustment
  - parking and emergency brake adjustment
- post-service testing procedures for air braking systems, including static and dynamic testing.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air braking systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer air braking system specifications
- two different vehicles or machinery with air disc and air drum braking systems requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing air braking systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTB006 Inspect, service and repair auxiliary braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, service and repair auxiliary braking systems. It involves preparing for the task, inspecting the system, servicing and carrying out any necessary repairs to the system, performing post-service or repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The auxiliary braking systems include those of agricultural machinery, heavy commercial vehicles or mobile plant machinery. The unit applies to vehicles or machinery fitted with speed reducing or control devices, such as engine brakes, exhaust brakes or hydraulic or electrical retarders.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Brakes

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect, service and repair auxiliary braking system	1.1 Job requirements are determined from workplace instructions 1.2 Inspection, service and repair procedures and information are sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment are selected and checked for serviceability
2. Conduct inspection and analyse results	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Faults are identified from inspection results and causes of faults are determined as required 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service and repair system	3.1 Service and repair procedures and information are sourced and interpreted 3.2 Service and repair tools, equipment and materials are selected and checked according to workplace procedures 3.3 Service, repairs and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.4 Post-service and repair testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of auxiliary braking information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking auxiliary braking system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making repair recommendations, and recording parts and material used.
Numeracy skills to:	• measure auxiliary braking system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with hot exhaust components.

Unit Mapping Information

Equivalent to AURTTB3006 Inspect, service and repair auxiliary braking systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTB006 Inspect, service and repair auxiliary braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, service and repair the auxiliary braking systems of two different vehicles or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, servicing and repairing auxiliary braking systems, including procedures for working with hot exhaust components
- identification, function and operating principles of auxiliary braking systems and their components, including:
  - internal engine compression braking
  - external exhaust braking
  - hydraulic retarder
  - electrical retarder
  - control circuits
- inspection procedures for auxiliary braking systems
- service, repair and adjustment procedures for auxiliary braking systems
- post-repair testing procedures for auxiliary braking systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the auxiliary braking systems that they have serviced and repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer auxiliary braking system specifications
- two different vehicles or machinery with auxiliary braking systems requiring service and repair
- tools and equipment appropriate for inspecting, servicing, repairing and adjusting auxiliary braking systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTB007 Remove and replace brake assemblies

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to remove and replace the front and rear brake assemblies of a vehicle. It requires the learner to plan and prepare the task; identify types of brake assemblies; inspect components and identify their function; remove and replace the front and rear brake assemblies; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Brakes

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and replace brake	1.1 ***Safety and environmental requirements*** are sourced and interpreted

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ELEMENTS	PERFORMANCE CRITERIA
assemblies	1.2 Task instruction is interpreted and vehicle brake assemblies to be worked on are identified 1.3 Manufacturer specifications and workplace procedures for brake assemblies removal and replacement are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 Tools and equipment required for removing and replacing brake assemblies are identified according to manufacturer specifications
2. Remove and inspect brake assemblies	2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements 2.2 Vehicle is prepared for brake assemblies removal according to workplace procedures and safety and environmental requirements 2.3 ***Brake assemblies*** are removed according to workplace procedures and safety and environmental requirements, and without causing damage to components, tools or equipment 2.4 Brake assemblies' components are arranged, identified and inspected according to manufacturer specifications 2.5 Brake assemblies' inspection results are recorded
3. Replace brake assemblies	3.1 Brake assemblies are prepared for replacement 3.2 Brake assemblies are replaced according to workplace procedures, manufacturer specifications, and safety and environmental requirements, and without causing damage to components, tools or equipment 3.3 Brake assemblies are adjusted and bled
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle is presented ready for use or storage according to workplace procedures 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 4.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of vehicle braking system information and brake assembly removal and replacement procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace front and rear brake assemblies • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• read and interpret numerical information in brake system component identification codes • use specialist tools and measuring equipment correctly, including verniers, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters) • use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate clearances.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes.
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.
Technology skills to:	• set up and operate equipment and tools required to remove and replace front and rear brake assemblies.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
	  • use of personal protective equipment, including safety glasses, ear protection and safety footwear
	  • use of hand tools and lifting equipment
	  • application of procedures for handling and disposing of used brake fluid, lubricants and asbestos-based products, including brake dust.

Brake assemblies must include:	• both front disc brake assemblies • both rear drum brake assemblies.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTB007 Remove and replace brake assemblies

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly remove and replace the brake assemblies of at least two different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools and lifting equipment
  - safety data sheets (SDS) and procedures for handling and disposing of waste brake fluid, lubricants and asbestos-based products, including brake dust
- types, application and basic operation of brake assembly, including:
  - disc brake systems
  - drum brake systems
  - hand brake systems
  - brake fluids
- brake assembly function and basic principles of operation
- brake assembly component names and their functions
- brake assembly dismantling procedures, including:
  - disc caliper, pad and disc removal
  - brake drum, shoes and wheel cylinder removal
- brake assembly inspection procedures, including:
  - brake hose serviceability
  - disc thickness

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  - disc runout
  - brake shoe serviceability
  - brake drum wear
- brake assembly replacement procedures, including:
  - disc pad replacement
  - caliper pin lubrication
  - disc replacement
  - brake cylinder and shoe replacement
  - bleeding and adjustment procedures
- work area clean-up and maintenance requirements.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and replaced front and rear brake assemblies, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two vehicles fitted with front and rear brake assemblies, including disc and drum brake assemblies
- tools and special equipment, including lifting equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTB012 Attach friction materials and radius grind

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to attach brake and clutch friction materials using bonding, riveting or screwing methods and radius grind brake shoes. It involves preparing for the task, selecting and attaching friction material, radius grinding, and completing workplace processes and documentation.

This unit applies to those working within the automotive vehicle body repair industry. The friction materials include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical - Brakes

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare to attach friction materials	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret friction material attaching procedures and information in order to identify friction material attaching options required for the job 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies 1.4 Identify tools and equipment required for the job and examine for serviceability

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	1.5 Measure components and evaluate against manufacturer specifications 1.6 Identify and prepare components for bonding or riveting according to workplace procedures, workplace health and safety and environmental requirements
2. Attach friction materials	2.1 Identify and prepare friction materials to be attached according to workplace procedures, workplace health and safety, and environmental requirements 2.2 Attach friction materials to components according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements
3. Radius grind brake shoes	3.1 Obtain and interpret radius grinding procedures from manufacturer specifications 3.2 Radius grind brake shoes according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 3.3 Measure brake shoes against manufacturer specifications and according to workplace procedures and rectify any issues identified 3.4 Test brake shoes according to workplace procedures, workplace health and safety and environmental requirements
4. Complete work processes	4.1 Carry out final inspection to ensure work is to workplace expectations and components are ready for use or stored according to workplace procedures 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Examine and store tools and equipment according to workplace procedures 4.4 Complete documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of friction attaching material and radius grinding information efficiently
Reading skills to:	• read and interpret information from workplace procedures and documentation on safe operating procedures for attaching friction materials and using radius grinding machinery

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Writing skills to:	• legibly and accurately fill out workplace documentation when making recommendations and recording parts and material used
Oral communication skills to:	• clarify instructions • report findings • make recommendations
Numeracy skills to:	• measure components • use basic mathematical operations, including addition and subtraction • calculate tolerances and deviations from manufacturer specifications
Problem solving skills to:	• identify risk factors and take action to minimise risk
Technology skills to:	• use radius grinding machinery • use measuring equipment including tape measures, rulers and vernier calipers

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURTTB012 Attach friction materials and radius grind (Release 1)	AURTTB002 Attach friction materials and radius grind (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Minor additions to performance criteria. Removal of references to OHS requirements. Removal of range of conditions. Addition of assessor requirements.	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTB012 Attach friction materials and radius grind

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must attach friction materials to and radius grind the following two vehicle components:

- one set of brake shoes
- one clutch plate
-

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures for attaching friction materials and radius grinding including:

- how to locate and interpret manufacturers specifications or equivalent information and workplace procedures for attaching friction materials and radius grinding
- the following workplace health and safety requirements relating to attaching friction materials and radius grinding:
  - procedures for working with brake machining equipment
  - selecting and using personal protective equipment (PPE)
  - procedures for handling and controlling brake dust
- the following technical information relating to attaching friction materials and radius grinding including:
  - material selection procedures
  - procedures for preparing components for friction material attachment:
  - friction material removal procedures
  - component cleaning procedures
  - friction material shaping and sizing procedures
  - procedures for attaching friction materials:

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  - bonding
  - riveting
  - procedures for radius grinding brake shoes
- environmental procedures for trapping, storing and disposing of brake dust produced during radius grinding
- workplace housekeeping and documentation procedures

Attaching friction materials and radius grinding technical information, including:

- coefficient of friction
-

Assessment Conditions

The assessment must:

- include access to:
  - an automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to attaching friction materials and radius grinding activity
  - workplace procedures relating to attaching friction materials and radius grinding activity
  - manufacturer specifications or equivalent documentation for attaching friction materials and for radius grinding
  - PPE for attaching friction materials and radius grinding
  - brake shoes and clutch plate requiring friction material attachment and radius grinding
  - bonding and riveting materials
  - radius grinding machinery
  - equipment, hand and power tooling suitable for attaching friction materials and radius grinding
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor Requirements

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Assessors of this unit must:

satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards

Links

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AURTTB013 Machine brake drums and brake disc rotors

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to measure, evaluate and machine vehicle brake drums and brake disc rotors to manufacturer specifications. It involves preparing for the task, machining disc brake rotors and brake drums, and completing workplace processes and documentation.

This unit applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical - Brakes

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare to machine brake drums and brake disc rotors	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret brake drum and disc rotor machining procedures and information to identify machining options required for the job 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies 1.4 Identify and examine tools and equipment required for the job, including disc and drum brake lathe and examine for serviceability

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	1.5 Measure brake drums and brake disc rotors and evaluate against manufacturer specifications 1.6 Prepare brake drums and brake disc rotors for machining according to workplace procedures, workplace health and safety and environmental requirements
2. Carry out machining operations	2.1 Position brake drums and brake disc rotors in brake lathe according to manufacturer specifications, workplace procedures, and workplace health and safety requirements 2.2 Machine brake drums and brake disc rotors according to manufacturer specifications, workplace procedures and workplace health and safety requirements 2.3 Measure brake drums and brake disc rotors against manufacturer specifications according to workplace procedures 2.4 Visually evaluate brake drums and brake disc rotors to ensure safe operation according to workplace procedures
3. Complete work processes	3.1 Carry out final inspection to ensure work meets workplace expectations and brake drums and brake disc rotors are ready for use or stored according to workplace procedures 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Examine and store tools and equipment according to workplace procedures 3.4 Complete workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of machining brake drums and brake disc rotors information efficiently
Reading skills to:	• read and interpret information and ideas from workplace procedures and documentation on safe operating procedures for brake drums and brake disc rotor machining equipment • read and interpret information from manufacturer specifications
Writing skills to:	• legibly and accurately fill out workplace documentation when recording measurements, and recording parts and material used

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Oral communication skills to:	• clarify instructions • make repair recommendations
Numeracy skills to:	• measure braking drums and brake disc rotors • use basic mathematical operations, including addition and subtraction • calculate distances, tolerances and deviations from manufacturer specifications
Planning and organising skills to:	• plan own work requirements • prioritise actions to achieve required outcomes • ensure tasks are completed within workplace timeframes
Technology skills to:	• use braking system measuring equipment, including vernier calipers, micrometers and brake drum micrometers • use brake lathes

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURTTB013 Machine brake drums and brake disc rotors (Release 1)	AURTTB003 Machine brake drums and brake disc rotors (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Removal of minor elements from foundation skills. Removal of references to OHS requirements. Removal of range of conditions. Addition of assessor requirements.	Equivalent

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Links

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Assessment Requirements for AURTTB013 Machine brake drums and brake disc rotors

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate evidence of machining the following:

- the four disc rotors of a four wheel disc brake system
- the two brake drums of a rear drum brake system or all four brake drums of a four wheel drum brake system
-

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures for machining brake drums and brake disc rotors including:

- how to locate and interpret manufacturer specifications or equivalent documentation and workplace procedures relating to machining brake drums and brake disc rotors
- the following workplace health and safety requirements relating to machining brake drums and brake disc rotors:
  - procedures for working safely with brake machining equipment
- the following measurement and evaluation procedures for brake drums and brake disc rotors:
  - using vernier calipers, micrometers, brake drum micrometers and dial gauge indicators
  - visual inspection procedures for brake drums and brake disc rotors
- environmental procedures for trapping, storing and disposing of metal swarf produced during machining
- workplace housekeeping and documentation procedures

Machining brake drums and brake disc rotors technical information including:

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- the purpose and operation of the following brake drum and brake disc rotor machining equipment:
  - off-vehicle machining
  - on-vehicle machining
  -

Assessment Conditions

The assessment must:

- include access to:
  - an automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to machining brake drums and brake disc rotors activity
  - workplace procedures relating to machining brake drums and brake disc rotors activity
  - manufacturer specifications or equivalent documentation for machining brake drums and brake disc rotors
  - brake drums and brake disc rotors requiring machining as specified in the performance evidence
  - brake drum and brake disc rotor machining equipment
  - measuring equipment for light vehicle braking systems including, vernier calipers, micrometers, brake drum micrometers and dial gauge indicators
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor Requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards
-

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTB015 Assemble and fit braking system components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to assemble and fit braking system components to vehicles. It involves preparing for the task, assembling and fitting brake components, post-fitting testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The braking systems include those of vehicles in all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical - Brakes

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare to assemble and fit braking system components	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret procedures and information for assembling and fitting braking system components to identify options required for the job 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies 1.4 Identify tools and equipment required for the job and examine for serviceability
2. Assemble and fit	2.1 Inspect components for suitability and report faults according to

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components	workplace procedures 2.2 Assemble components according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 2.3 Fit components according to manufacturer specifications, workplace procedures, and workplace health and safety requirements
3. Test components	3.1 Obtain and interpret testing procedures from manufacturer specifications 3.2 Test braking system according to manufacturer specifications and adjust as required 3.3 Tag failed components for further work 3.4 Record test results according to workplace procedures
4. Complete work processes	4.1 Carry out final inspection to ensure work is to workplace expectations and vehicle is ready for use according to workplace procedures 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Examine and store tools and equipment according to workplace procedures 4.4 Complete workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of braking system information efficiently
Reading skills to:	• read and interpret information and ideas from workplace procedures and documentation on safe operating procedures for assembling, fitting and testing braking system equipment • read and interpret information from manufacturer specifications
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting findings, making repair recommendations, and recording parts and material used
Oral communication skills to:	• clarify instructions • report faulty components

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	• make fitting recommendations
Numeracy skills to:	• measure braking system and vehicle components • use basic mathematical operations, including addition and subtraction • calculate distances and tolerances
Planning and organising skills to:	• plan own work requirements • prioritise actions to achieve required outcomes • ensure tasks are completed within workplace timeframes
Technology skills to:	• use braking system measuring equipment including vernier calipers, micrometers and brake drum calipers

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURTTB015 Assemble and fit braking system components (Release 1)	AURTTB005 Assemble and fit braking system components (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Removal of references to OHS requirements. Removal of range of conditions. Addition of assessor requirements.	Equivalent

Links

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Assessment Requirements for AURTTB015 Assemble and fit braking system components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate assembling and fitting three different components from one of the following braking systems:

- hydraulic
- pneumatic over hydraulic
- vacuum over hydraulic
- electric
- electric over hydraulic
- pneumatic
-

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures for assembling and fitting braking system components including:

- how to locate and interpret manufacturer specifications or equivalent documentation and workplace procedures for assembling and fitting braking system components
- the following workplace health and safety requirements relating to assembling and fitting brake system components:
  - procedures for lifting and supporting vehicles
  - procedures for handling and controlling brake dust and brake fluids
- the following technical braking systems information including:
  - procedures and techniques for assembling braking system components
  - procedures and techniques for fitting and testing braking system components
- environmental procedures for trapping, storing and disposing of brake dust and brake fluid released during assembly and fitting process
- workplace housekeeping and documentation procedures

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Technical braking systems information including:

- the operation of the following braking systems and their components:
  - hydraulic
  - pneumatic over hydraulic
  - vacuum over hydraulic
  - electric
  - electric over hydraulic
  - pneumatic
  -

Assessment Conditions

The assessment must:

- include access to:
  - an automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - workplace instructions relating to the assembly and fit of braking system component
  - workplace procedures relating to assembly and fit of braking system components
  - manufacturer specifications or equivalent information relating to the assembly and fit of braking system components
  - components of the braking systems specified in the performance evidence
  - vehicles requiring the fitting and assembly of the braking systems specified in the performance evidence
  - equipment, hand and power tooling appropriate for assembling, fitting and testing braking systems and associated components
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor Requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards
-

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AURTTC001 Inspect and service cooling systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service air and liquid cooling systems. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, reporting the inspection findings, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The cooling systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycle or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Cooling Systems

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service cooling system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect cooling system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service cooling system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or equipment is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to cooling systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• calculate and adjust coolant volumes and ratios using basic mathematical operations, including addition, subtraction, multiplication and division • determine cooling system pressures for comparison to specifications.
Technology skills to:	• use cooling system test equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with:
	  • hot pressurised cooling systems
	  • rotating fans, belts and pulleys
	  • coolant additives
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from cooling systems.

Unit Mapping Information

Equivalent to AURTTC2001 Inspect and service cooling systems

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Links

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Assessment Requirements for AURTTC001 Inspect and service cooling systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the cooling systems of two different vehicles or machinery
- undertake post-service testing of above systems, which must include:
  - pressure testing
  - testing and adjusting coolant additives.

Knowledge Evidence

- Individuals must be able to demonstrate knowledge of:
- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing cooling systems, including procedures for working with:
  - hot pressurised cooling systems
  - rotating fans, belts and pulleys
  - coolant additives
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from cooling systems
- identification, function and basic operation of liquid cooling system, including:
  - engine coolant additives
  - water pumps
  - filters
  - thermostats
  - mechanical, hydraulic and electric fans
  - radiators and radiator caps

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  - heater core and heater valve
  - expansion tanks
  - heat exchangers
  - core plugs
  - hoses
  - drive belts
  - temperature sensors and gauges
  - keel cooling, heat exchanger, raw water cooling and sacrificial anodes
- identification, function and basic operation of air cooling system, including:
  - cooling system controls, fans, fins and cowlings
- types, quantities and applications of coolant additives, including coolant concentration
- inspection procedures for cooling systems, including:
  - coolant concentration test
  - transient voltage test
  - cooling system components
  - cooling system pressure testing
- service and adjustment procedures for cooling systems, including:
  - system cleaning
  - coolant replacement
  - cooling system bleeding
- post-service testing procedures for cooling systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the cooling systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- workplace instructions
- manufacturer cooling system specifications
- two different vehicles or machinery with cooling systems requiring servicing
- cooling system test equipment
- tools, equipment and materials appropriate for inspecting and servicing cooling systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTC002 Repair radiators

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to repair radiators. It involves preparing for the task, cleaning, inspecting, repairing and performing post-repair testing on radiators, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The radiators include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Cooling Systems

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to undertake radiator repairs	1.1 Job requirements are determined from workplace instructions 1.2 Information, procedures and methods are sourced and analysed

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Hazards associated with the work are identified and risks are managed 1.4 Required tools for radiator repair are selected, checked and prepared for serviceability 1.5 Materials required for radiator repair are checked and prepared
2. Carry out repair operations	2.1 Radiator is dismantled as required according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Radiator is cleaned, inspected, measured and tested according to manufacturer specifications, workplace procedures and safety requirements 2.3 Radiator is evaluated and repair requirements are determined and reported according to workplace procedures 2.4 Components are repaired, replaced and adjusted according to manufacturer specifications, workplace procedures and safety requirements
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and radiator is presented ready for use or stored according to workplace procedures 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret safe operating procedures from signs and workplace and manufacturer literature for radiator testing, including for

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Skills	Description
	dismantling and assembling equipment • interpret information from workplace and manufacturer literature when seeking radiator specifications and repair procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report diagnostic findings, and make repair recommendations.
Numeracy skills to:	• understand and communicate radiator dimensions in metric and imperial units of measurement • measure radiator components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use measuring equipment, such as tape measures, rulers and vernier calipers • use soldering and welding equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using heating and welding equipment
	  • working with corrosive cleaning agents
	• environmental requirements, including procedures for trapping, storing and disposing of coolant released from radiators.

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Unit Mapping Information

Equivalent to AURTTC2002 Carry out radiator repairs

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTC002 Repair radiators

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- repair three different radiators, in which the work must involve the following materials:
  - aluminium
  - copper
  - plastic.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing radiators, including procedures for:
  - using heating and welding equipment
  - working with corrosive cleaning agents
- environmental requirements, including procedures for trapping, storing and disposing of coolant released from radiators
- application, purpose and operation of radiators, including:
  - aluminium, copper and plastic radiators
  - cooling system, heater core and intercoolers
- dismantling procedures for aluminium, copper and plastic radiators
- cleaning, inspecting and testing procedures for aluminium, copper and plastic radiators, including:
  - visual inspection
  - pressure testing
  - tank testing
- repair procedures for aluminium, copper and plastic radiators, including soldering

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- post-repair procedures for radiators, including pressure testing.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the radiators that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- three different radiators made of the materials specified in the performance evidence and requiring repair
- tools, equipment and materials appropriate for repairing radiators.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTC004 Remove and replace radiators

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to remove and replace the radiator of a vehicle. It requires the learner to plan and prepare the task; remove the radiator and inspect it and its associated components; replace the radiator; top up the cooling system and check for leaks; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Cooling Systems

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and replace radiator	1.1 ***Safety and environmental requirements*** are sourced and interpreted

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ELEMENTS	PERFORMANCE CRITERIA
	1.2 Task instruction is interpreted and vehicle radiator to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for radiator removal and replacement are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 Tools and equipment required for removing and replacing radiator are identified according to manufacturer specifications
2. Remove radiator	2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements 2.2 Vehicle is prepared for radiator removal according to workplace procedures and safety and environmental requirements 2.3 ***Vehicle radiator*** is removed according to workplace procedures and manufacturer specifications, and without causing damage to components, tools or equipment 2.4 Radiator and associated components are inspected according to manufacturer specifications 2.5 Results of inspection of radiator and its associated components are recorded
3. Replace radiator	3.1 Radiator is prepared for replacement 3.2 Radiator is replaced according to workplace procedures, manufacturer specifications, and safety and environmental requirements, and without causing damage to components, tools or equipment 3.3 ***Cooling system is tested*** according to manufacturer specifications 3.4 Cooling system test results are recorded
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle is presented ready for use or storage according to workplace procedures 4,2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 4.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information on vehicle cooling system and radiator removal and refitting procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace radiators • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• read and interpret numerical information in cooling system information • use specialist tools and measuring equipment correctly, including pressure testers, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. kPa for kilopascals) • use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate ratios of coolant.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes.
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.
Technology skills to:	• set up and operate equipment and tools required to remove and replace radiators.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including: • use of personal protective equipment, including safety glasses, ear protection and safety footwear • use of automotive hand tools • application of procedures for handling and disposing of used coolant.
Vehicle radiator must include:	• radiator for an engine with a liquid cooling system.
Cooling system is tested must include:	• pressure-testing the cooling system.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTC004 Remove and replace radiators

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly and safely remove and replace the radiators of at least two different vehicles or engine assemblies.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS)and environmental requirements, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of automotive hand tools and lifting equipment
  - safety data sheets (SDS) and procedures for handling and disposing of used coolant
- types, application and basic operation of radiators, including:
  - vertical flow radiators
  - cross flow radiators
  - cooling system coolants and additives
  - radiator hoses and clamps
- radiator removal procedures, including procedures for catching and storing engine coolant
- radiator and associated component inspection procedures
- radiator replacement procedures, including:
  - calculating coolant system filling and additive concentration
  - coolant system bleeding
- work area clean-up and maintenance requirements.

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Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and replaced radiators, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two motor vehicles or engine assemblies with engines with a liquid cooling system
- automotive hand tools and special equipment, including cooling system pressure tester.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTD001 Inspect steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and test steering system components and assess their condition. It involves preparing for the task, inspecting the system, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The steering systems are both mechanical and power assisted steering systems and include those of heavy commercial vehicles or light vehicles.

This unit applies to those inspecting steering systems prior to conducting a wheel alignment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect steering system	1.1 Job requirements are determined from workplace instructions 1.2 Inspection information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect steering system	2.1 ***Inspection*** is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking inspection procedures and specifications relating to steering systems.
Writing skills to:	• legibly and accurately fill out documentation when reporting inspection findings and making recommendations.

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Skills	Description
Oral communication skills to:	• clarify instructions • report inspection findings to appropriate personnel.
Numeracy skills to:	• compare component wear against manufacturer specifications and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Problem solving skills to:	• refer problems outside area of responsibility to appropriate person.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Inspection must include:	• visual, aural and functional assessments of mechanical, hydraulic and electrical steering system components, including for damage, corrosion, wear and leakage.
Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for lifting and supporting vehicles.

Unit Mapping Information

Equivalent to AURTTD2001 Inspect steering systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTD001 Inspect steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect the following components of two different vehicle steering systems:
  - hydraulic components
  - steering column and couplings
  - steering linkages.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting steering systems, including procedures for lifting and supporting vehicles
- identification and function of major steering components, including:
  - steering wheel, column and couplings
  - rack and pinion
  - steering box
  - power steering pump, pipes and hoses
  - steering linkages, including:
    - ball joints
    - tie rods and tie rod ends
    - idler arms
    - connecting rod, track rod or drag link
    - pitman arms

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    - steering arms
    - king pins
- basic operation of steering systems, including:
    - manual steering systems
    - power assisted steering systems
    - electronically controlled systems
- inspection and reporting procedures for steering systems and components, including:
    - component wear analysis
    - fluid leaks.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the steering systems that they have inspected, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer steering system specifications
- two different vehicles with steering systems requiring inspection prior to wheel alignment
- tools, equipment and materials appropriate for inspecting steering systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTD002 Inspect and service steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service steering systems. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The steering systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Steering and Suspension

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service steering system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect steering system	2.1 ***Inspection*** is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service steering system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to steering systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• compare component wear and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Problem solving skills to:	• refer problems outside area of responsibility to appropriate person.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Inspection must include:	• inspecting for:
	  • wear
	  • oil and fluid leaks
	  • physical damage.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for isolating and stabilising vehicles or machines • environmental requirements, including procedures for trapping, storing and disposing of oil and fluid released from steering systems.

Unit Mapping Information

Equivalent to AURTTD2002 Inspect and service steering systems

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTD002 Inspect and service steering systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the steering systems of two different vehicles or machinery, including one of the following:
  - manual steering
  - electric power assisted steering
  - hydraulic power assisted steering
  - full hydraulic steering.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing steering systems, including procedures for isolating and stabilising vehicles or machines
- environmental requirements, including procedures for trapping, storing and disposing of oil and fluid released from steering systems
- identification, function and basic operation of steering systems, including:
  - manual steering
  - electric power assisted
  - hydraulic power assisted steering
  - full hydraulic steering
- identification and function of major steering components
- types and applications of lubricants and hydraulic fluids
- inspection procedures for steering systems, including:

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  - component wear analysis
  - oil and fluid leaks
- physical damage
- service and adjustment procedures for steering systems, including:
  - adjusting and replenishing oil and fluid levels as required
  - lubricating components
- post-service testing procedures of steering systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the steering systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer steering system specifications
- two different vehicles or machinery with the steering systems specified in the performance evidence and requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing steering systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTD003 Inspect suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and test front and rear suspension system components and assess their condition. It involves preparing for the task, inspecting the system, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The suspension systems include those of heavy commercial vehicles or light vehicles.

This unit applies to those inspecting suspension systems prior to conducting a wheel alignment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publications.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect suspension system	1.1 Job requirements are determined from workplace instructions 1.2 Inspection information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect suspension system	2.1 ***Inspection*** is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking inspection procedures and specifications relating to suspension systems.
Writing skills to:	• legibly and accurately fill out documentation when reporting inspection findings and making recommendations.

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Skills	Description
Oral communication skills to:	• clarify instructions • report inspection findings to appropriate personnel.
Numeracy skills to:	• compare component wear against manufacturer specifications and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Problem solving skills to:	• refer problems outside area of responsibility to appropriate person.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Inspection must include**:**	• visual, aural and functional assessments of front and rear suspension components, including for damage, corrosion, wear and leakage.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • lifting and supporting vehicles
	  • working with stored energy in springs and accumulators.

Unit Mapping Information

Equivalent to AURTTD2003 Inspect suspension systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTD003 Inspect suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect the front and rear suspension systems of two different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS**)** and occupational health and safety (OHS) requirements relating to inspecting suspension systems, including procedures for:
  - lifting and supporting vehicles
  - working with stored energy in springs and accumulators
- identification and function of major front and rear suspension components, including:
  - control arms, bushes, links and rods
  - ball joints
  - struts and springs
  - leaf springs, hangers and shackles
  - torsion bars
  - air suspension
  - shock absorbers
  - height control systems
- basic operation of front and rear suspension systems
- inspection and reporting procedures for suspension systems and components, including:
  - component wear analysis
  - fluid leaks.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer suspension system specifications
- two different vehicles with suspension systems requiring inspection prior to wheel alignment
- tools, equipment and materials appropriate for inspecting suspension systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTD004 Inspect and service suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service front and rear suspension systems. It involves preparing for the task, inspecting the front and rear suspension system for wear, oil or air leaks and physical damage, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The suspension systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery, motorcycles, outdoor power equipment or trailers.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Steering and Suspension

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service suspension system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect suspension system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service suspension system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to suspension systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to compare component wear to distances, tolerances and deviations in manufacturer specifications.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with stored energy
	  • isolating and stabilising vehicles and machinery.

Environmental requirements must include**:**	• procedures for trapping, storing and disposing of lubricants and fluids released from suspension systems.

Unit Mapping Information

Equivalent to AURTTD2004 Inspect and service suspension systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTD004 Inspect and service suspension systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the front and rear suspension systems of two different vehicles or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing suspension systems, including procedures for:
  - working with stored energy
  - isolating and stabilising vehicles and machinery
- environmental requirements, including procedures for trapping, storing and disposing of lubricants and fluids released from suspension systems
- identification, function and basic operation of major front and rear suspension components, including:
  - spring types and dampers
  - suspension arms
  - suspension components
- types and applications of lubricants and fluids
- inspection procedures for suspension systems, including:
  - analysing component wear
  - checking fluid and air leaks
  - evaluating physical damage
- service and adjustment procedures for suspension systems, including:

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  - adjusting and replenishing oil and fluid levels as required
  - lubricating components
- post-service testing procedures for suspension systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the suspension systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer suspension system specifications
- two different vehicles or machinery with suspension systems requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing suspension systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTD005 Overhaul steering system components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return steering system components to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the steering system components, carrying out the overhaul procedures, reassembling and testing the components, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The steering systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery or outdoor power equipment. The unit does not apply to the steering systems of motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Steering and Suspension

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle steering system components	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate steering system components	2.1 Components are dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Component is cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Component is measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 serviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble components	4.1 Components are assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of components is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and components are presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for steering systems components efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking steering system component specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure steering system components and use basic mathematical

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Skills	Description
	operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers and micrometers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for using:
	  • specialised steering system component overhaul tools, equipment and machinery
	  • chemicals and toxic substances
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from steering systems.

Unit Mapping Information

Equivalent to AURTTD4005 Overhaul steering system components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTD005 Overhaul steering system components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul the following steering system components:
  - two different power steering pumps
  - one of the following components:
    - power rack and pinion steering box
    - steering column
    - recirculating ball steering box.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling steering system components, including procedures for using:
  - specialised steering system component overhaul tools, equipment and machinery
  - chemicals and toxic substances
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from steering systems
- types, characteristics and operating principles of steering systems and associated components
- steering system component overhaul procedures, including:
  - methods for cleaning and preparing steering system components for overhaul
  - steering system component dismantling procedures
  - steering system component inspection, measuring and evaluation procedures, including methods for measuring and calculating tolerances and clearances

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  - steering system component repair and adjustment procedures, including:
    - power steering pumps
    - power rack and pinion steering boxes
    - steering columns
    - recirculating ball steering boxes
  - steering system component assembly procedures, including procedures for measuring and calculating tolerances, and adjusting components
- post-overhaul testing procedures for steering system components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the steering system components that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer steering system component specifications
- steering system components specified in the performance evidence and requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting steering system components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTD006 Remove and replace vehicle front suspension springs

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to remove and replace the front suspension springs of a vehicle. It requires the learner to plan and prepare the task; remove the springs and inspect them and associated components; replace the springs and check the vehicle ride height; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and	1.1 ***Safety requirements*** are sourced and interpreted

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ELEMENTS	PERFORMANCE CRITERIA
replace vehicle front suspension springs	1.2 Task instruction is interpreted and vehicle suspension to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for removing and replacing suspension springs are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 Tools and equipment required for suspension spring removal and replacement are identified according to manufacturer specifications
2. Remove and inspect front suspension springs	2.1 ***Tools, equipment and materials*** are selected and checked prior to use according to manufacturer specifications and safety requirements 2.2 Vehicle is prepared for suspension springs removal according to workplace procedures and safety requirements 2.3 ***Front suspension springs*** are removed according to workplace procedures and safety requirements, and without causing damage to components, tools or equipment 2.4 Front suspension spring components are arranged, identified and inspected according to manufacturer specifications 2.5 Results of inspecting front suspension spring components are recorded
3. Replace front suspension springs	3.1 Front suspension components are prepared for assembly 3.2 Front suspension is assembled according to workplace procedures, manufacturer specifications and safety requirements, and without causing damage to components, tools and equipment 3.3 Vehicle ride height is checked according to manufacturer specifications
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle is presented ready for use or storage according to workplace procedures 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 4.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance criteria and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of vehicle suspension system information and suspension spring removal and replacement procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace vehicle front suspension springs • select and interpret key information from workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• read and interpret numerical information in suspension system information • use specialist tools and measuring equipment correctly, including tape measures, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters) • use basic mathematical operations, including addition and subtraction to calculate length.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes.
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.
Technology skills to:	• set up and operate equipment and tools required to remove and replace vehicle front suspension springs.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
	  • use of personal protective equipment, including safety glasses, ear protection and safety footwear
	  • use of hand tools and lifting equipment.

Tools, equipment and materials must include:	• automotive hand tools • lifting and supporting equipment • related special tools, including spring compressors.

Front suspension spring must include:	• front suspension springs from one of the following:
	  • passenger or light commercial vehicle
	  • motor cycle
	  • constructed vehicle.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTD006 Remove and replace vehicle front suspension springs

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly remove and replace the front suspension springs of at least two different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
  - dangers of working with stored energy in suspension springs
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools and lifting and supporting equipment
- types, application and basic operation of front suspension springs, including:
  - MacPherson strut
  - coil springs
- suspension spring removal procedures, including procedures for compressing springs
- suspension spring and associated component inspection procedures
- suspension spring replacement procedures, including ride height measurement procedures
- work area clean-up and maintenance requirements.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and replaced front suspension springs, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two vehicles with complete front suspension assemblies
- tools and special equipment, including lifting and supporting equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTD007 Remove and replace steering assemblies

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to remove and replace the steering assemblies of a vehicle. It requires the learner to plan and prepare the task; remove the steering assembly and inspect it and its associated components; replace the steering assembly; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Steering and Suspension

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and replace a steering	1.1 ***Safety and environmental requirements*** are sourced and interpreted

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ELEMENTS	PERFORMANCE CRITERIA
assembly	1.2 Task instruction is interpreted and vehicle steering assembly to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for removing and replacing steering assembly are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 ***Tools and equipment*** required for removing and replacing steering assembly are identified according to manufacturer specifications
2. Remove and inspect steering assembly	2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements 2.2 Vehicle is prepared for steering assembly removal according to workplace procedures and safety and environmental requirements 2.3 ***Vehicle steering assembly*** is removed according to workplace procedures and manufacturer specifications and safety and environmental requirements, and without causing damage to components, tools or equipment 2.4 Steering assembly components are arranged, identified and inspected according to manufacturer specifications 2.5 Results of inspecting steering system components are recorded
3. Replace steering assembly	3.1 Steering assembly components are prepared for assembly 3.2 Steering assemblies are replaced according to workplace procedures, manufacturer specifications and safety and environmental requirements, and without causing damage to components, tools or equipment 3.3 Front wheel toe-in is measured and adjusted according to manufacturer specifications
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle steering assembly is presented ready for use or storage according to workplace procedures 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 4.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance criteria and is not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of vehicle steering system information and steering assembly removal and replacement procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace vehicle steering assemblies • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• read and interpret numerical information in steering system information • use specialist tools and measuring equipment correctly, including tape measures, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters) • use basic mathematical operations, including addition and subtraction to calculate length.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes.
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
	  • use of personal protective equipment, including safety glasses, ear protection and safety footwear
	  • use of hand tools and vehicle lifting equipment
	  • applying procedures for handling and disposing of used steering system fluids.

Tools and equipment must include:	• automotive hand tools • vehicle lifting equipment • product-related special tools, such as ball joint breakers.

Vehicle steering assemblies must include:	• assembly from one of the following:
	  • light vehicle
	  • light commercial vehicle
	  • motorcycle
	  • constructed vehicle.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTD007 Remove and replace steering assemblies

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly remove and replace steering assemblies of at least two different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements relating to the removal and replacement of steering assemblies, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools and vehicle lifting equipment
  - procedures for handling and disposing of used steering system fluids
- types, application and basic operation of steering assemblies, including:
  - manual steering
  - power assisted steering
- steering assembly removal procedures
- steering assembly and associated component inspection procedures
- steering assembly replacement procedures, including front toe-in measuring and adjustment procedures
- work area clean-up and maintenance requirements.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and replaced steering assemblies, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two vehicles fitted with steering assemblies
- tools and equipment, including lifting equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTE001 Apply knowledge of engine science

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to apply knowledge of the construction and operation of engines and their components during engine repair or reconditioning activities. It involves identifying engine components and describing their function.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Engines

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify relevant information of engine	1.1 Components of engine are identified during repair or reconditioning activities

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
construction and operation	1.2 Functions of engine components are identified during repair or reconditioning activities 1.3 Relationships between engine components, including effects on other components' tolerances and clearances, are identified during repair or reconditioning activities 1.4 Engine configurations are identified during repair or reconditioning activities
2. Apply relevant information of engine construction and operation to work activities	2.1 Knowledge of engine construction and operation is used during repair or engine reconditioning activities to carry out work according to manufacturer specifications and workplace procedures 2.2 Knowledge of engine diagnosis is used during repair or reconditioning activities to identify causes of engine component wear or failure
3. Evaluate knowledge of engine science	3.1 Knowledge of engine science is regularly checked with colleagues and supervisor to ensure currency and accuracy 3.2 Knowledge of engine science is updated as required to complement own work role

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate engine reconditioning procedures and engine specifications in workshop and manufacturer literature efficiently.
Reading skills to:	• interpret technical information and terminology found in workshop manuals and automotive textbooks relating to engines.
Communication skills to:	• discuss interpretation of engine science with colleagues and supervisor using listening skills and correct industry terminology.
Numeracy skills to:	• interpret numbers and units in information relating to engines in workshop manuals and automotive textbooks • use basic mathematical operations, including addition,

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Skills	Description
	subtraction and multiplication, to calculate engine dimensions • use simple formulas, such as $A = \pi r^2$ • interpret numbers and units used with measuring equipment, such as compression gauges and cylinder leakage testers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURTTE3001 Apply knowledge of engine sciences

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTE001 Apply knowledge of engine science

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria and foundation skills:

- apply knowledge of engine science to three different multi-cylinder engines when diagnosing and repairing engine faults or reconditioning engine components
- evaluate and expand knowledge of engine science, including demonstrating knowledge of one of the following:
  - new repair or reconditioning procedure
  - new engine technology
  - new reconditioning machine.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- classifications of engines, including:
  - internal and external combustion
  - rotary and reciprocating engines
  - spark ignition and compression ignition engines
  - engine cylinder arrangements
- engine configurations, including:
  - inline engines, V type engines and slant cylinder engines
  - opposed cylinder engines
- camshaft and valve locations, including:
  - overhead cam (OHC)
  - overhead valve (OHV)

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- engine operating principles, including:
  - combustion, including:
    - air to fuel ratios and flame propagation
    - direct and indirect fuel injection
    - detonation and pre-ignition
  - two-stroke and four-stroke cycles
- procedures for measuring engines and engine performance, including:
  - bore and stroke, including:
    - over square, square and under square engines
    - crank throw
  - swept volume and engine volume
  - compression ratio
  - engine efficiency, including volumetric efficiency, thermal efficiency and mechanical efficiency
  - torque and horsepower, including brake horsepower
- construction and operation of petrol engines, including:
  - basic metallurgy relating to engines
  - identification of metric and imperial threads
  - engine components, including cylinder blocks, cylinders, pistons, cylinder heads, combustion chambers, inlet and exhaust manifolds, connecting rods, crankshafts, piston rings, gudgeon pins, camshafts, cams and flywheels
- combustion chambers, including:
  - L head, bathtub, wedge, trapezoidal, hemispherical and heron-type shapes
  - multiple valve designs
- construction and operation of diesel engines, including:
  - direct and indirect injection
  - swirl chambers
  - pre-combustion chambers
- engine diagnosis, including:
  - wet and dry compression tests
  - cylinder leakage tests
  - cylinder power balance tests
  - vacuum tests
  - oil pressure tests
  - sources of fluid leaks
  - exhaust smoke diagnosis
- engine noise diagnosis, including procedures for identifying:
  - common engine noises
  - common abnormal combustion noises
- procedures for expanding knowledge, including location and content of:

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- technical literature relating to engine science
- technical information relating to new and emerging engine technologies.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine science they have applied to engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- three different multi-cylinder engines
- technical literature relating to engine science.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTE003 Remove and tag engine system components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify, remove and tag a range of engine components. It involves preparing for the work, removing and tagging engine components prior to engine dismantling by title, job number and engine application, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation for entering the automotive retail, service and repair industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Engines

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and tag engine component	1.1 Task instructions are interpreted and vehicle to be worked on is identified 1.2 Engine component information is sourced and interpreted 1.3 Potential hazards and risks associated with the task are identified and reported to workplace supervisor 1.4 Tools and equipment are selected and checked for serviceability
2. Remove component	2.1 Engine component for removal is identified 2.2 Component is removed according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to components or systems 2.3 Removed component is inspected and findings are recorded according to workplace procedures
3. Tag component	3.1 Tagging procedures are identified 3.2 Removed component is legibly ***tagged*** according to workplace procedures and without causing damage 3.3 Tagged components are stored according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instructions and workplace standards 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer specifications, workplace procedures, and safety requirements relating to engine components.
Writing skills to:	• legibly and accurately fill out workplace documentation, including tags, using correct industry terminology and conventions.
Numeracy skills to:	• interpret numerical information in task instructions and part numbers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with oils and fluids • environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from engines.
Tagged must include:	• component title • component condition • job number.

Unit Mapping Information

Equivalent to AURTTE1003 Remove and tag engine system components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTE003 Remove and tag engine system components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and tag five of the following components from one engine:
  - intake manifold
  - exhaust manifold
  - starter motor
  - alternator
  - ignition components
  - fuel system components
  - turbocharger
  - power steering pump
  - hydraulic pump.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and tagging engine system components, including procedures for working with oils and fluids
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from engines
- identification and basic function of the engine system components specified in the performance evidence
- procedures for removing and tagging engine system components, including:
  - component removal

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- component inspection
- component tagging, including key information required on tags
- component storage.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine components that they have removed and tagged, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- task instructions
- manufacturer engine component specifications
- one engine with the components specified in the performance evidence requiring removal and tagging
- tools, equipment and materials appropriate for removing and tagging engine system components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTE004 Inspect and service engines

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service engines. It involves preparing for the task, inspecting the engine, reporting the inspection findings, servicing and adjusting the engine, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The engines include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant or motorcycles. The unit does not apply to outdoor power equipment engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Engines

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
service engine	1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect engine	2.1 ***Inspection*** is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service engine	3.1 ***Service*** and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and ***environmental requirements***, and without causing damage to components or systems 3.2 ***Post-service testing*** is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature

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Skills	Description
	when seeking engine service procedures and specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• calculate liquid volumes and service schedule intervals, using mathematical operations, including addition and subtraction.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Inspection must include**:**	• pre- and post-service inspections for oil and fluid leaks • analysing abnormal engine noises • inspecting ancillary components.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with:
	  • rotating and hot components
	  • engine oils
	  • high energy ignition and charging systems.

Service must include:	• replacing oil and oil filter.
Environmental requirements must include:	• procedures for trapping, storing and disposing of fluids released from engines.
Post-service testing must include:	• starting up and running engine to operating temperature • checking for leaks and abnormal noises.

Unit Mapping Information

Equivalent to AURTTE2004 Inspect and service engines

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Links

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Assessment Requirements for AURTTE004 Inspect and service engines

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the engines of two different vehicles or machinery, including replacing the engine oil and filters.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing engines, including procedures for working with:
  - rotating and hot components
  - engine oils
  - high energy ignition and charging systems
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from engines
- identification and function of major engine components, including:
  - cylinder block and head
  - piston and connecting rod
  - crankshaft
  - valve train
  - manifolds
  - ports and reed valve
- identification and function of engine systems, including:
  - lubrication
  - cooling system

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    - fuel system
    - air system
- basic operation of spark ignition engines and compression ignition engines, including:
    - two-stroke spark ignition engines
    - four-stroke spark ignition engines
    - four-stroke compression ignition engines
- types and applications of engine configurations, including:
    - two-stroke spark ignition engines
    - four-stroke spark ignition engines
    - four-stroke compression ignition engines
- types and applications of engine oils and filters
- inspection procedures for engines, including:
    - oil and fluid leaks
    - ancillary components, including:
        - mountings
        - belts, pulleys and hoses
- service and adjustment procedures for engines, including:
    - adjusting or replacing engine components
    - replacing oil
    - replacing filter
- post-service testing procedures for engines.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- workplace instructions
- manufacturer engine specifications
- two different vehicles or machinery with engines requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing engines.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTE005 Overhaul engines

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return an engine removed from its chassis to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the engine, carrying out the overhaul procedures, reassembling and testing the engine, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry on two and four-stroke spark ignition and four-stroke compression engines. The engines include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery or motorcycles.

This unit does not apply to outdoor power equipment engines and marine outboard engines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Engines

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle engine	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate engine and components	2.1 Engine and relevant components are dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble engine and components	4.1 Engine is assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of engine is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and engine is presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for engines efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking engine specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure engine components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.

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Skills	Description
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Technology skills to:	• use precision measuring equipment, such as micrometers and dial bore gauges
	• use specialised engine overhaul equipment, such as:
	  • hones
	  • valve and valve seat cutting machinery.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for using:
	  • specialised engine overhaul tools, equipment and machinery
	  • chemicals and toxic substances
	  • manual and mechanical lifting equipment
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from engines.

Unit Mapping Information

Equivalent to AURTTE4005 Overhaul engines and associated engine components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTE005 Overhaul engines

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul two different multi-cylinder engines, including one engine with cylinder sleeves.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling engines and associated components, including procedures for:
  - using personal protective equipment (PPE) when handling engines and using chemical cleaning agents
  - using slings, chains and other lifting equipment and machinery
  - using specialised equipment, including heating torches, ovens and presses
  - handling freezing substances, including liquid nitrogen
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from engines
- types, characteristics and operating principles of engines and associated engine components
- engine overhaul procedures, including:
  - methods for cleaning and preparing engine for overhaul
  - engine dismantling procedures
  - engine and engine component inspection, measuring and evaluation procedures, including:
    - non-destructive testing procedures, including dye penetrant testing and magnetic particle testing
    - methods for measuring and calculating tolerances and clearances

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- engine and engine component repair and adjustment procedures, including:
  - engine cylinder head and block machining
  - engine crankshaft and camshaft grinding
  - engine cylinder and engine sleeve fitting, boring and honing
  - engine bearing tunnel and connecting rod repair
  - engine component heat treating, straightening and reclamation
  - engine component balancing
- engine assembly procedures, including procedures for tolerance measuring and calculating and adjusting components, including:
  - piston to connecting rod big-end alignment
  - big-end bearing to crankshaft journal clearance
  - big-end bearing crush with bearing blue
  - piston ring end gap, back clearance and side clearance
  - main bearing to crankshaft journal clearance
  - main bearing crush with bearing blue
  - semi-flanged thrust bearings to crankshaft clearance
  - finished camshaft bearings to camshaft clearance
  - camshafts and cam followers
  - camshaft end float
  - crankshaft end float
  - gear backlash
  - oil pump sealing and pick-up oil piping
- component assembly procedures and processes, including:
  - welsh plugs and oil gallery plugs
  - piston and connecting rod assemblies
  - big-end bearings
  - piston rings to pistons
  - main bearings and thrust washers
  - semi-flanged thrust bearings
  - crankshafts, including protection measures for crankshaft journals, bearings, rings and bores
  - finished camshaft bearings
  - camshafts and cam followers
  - timing gears
  - chains and tensioners
  - oil pumps, oil squirters and oil pump pick-ups
  - balance shafts
  - fitting ancillary components, including covers and seals, housings, diesel fuel injection pumps, oil coolers, crankshaft pulleys, flywheels and bell housings
- post-overhaul testing procedures for engines.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engines that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- two different multi-cylinder engines requiring overhaul, including an engine with cylinder sleeves
- tools, equipment and materials appropriate for overhauling and adjusting engines.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTE006 Remove and replace conventional engine assemblies

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to remove and replace the conventional engine assembly of a vehicle. It requires the learner to plan and prepare the task; remove the engine and inspect the associated components; replace the engine and check its operation; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Plan and prepare for engine removal and	1.1 ***Safety and environmental requirements*** are sourced and interpreted

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ELEMENTS	PERFORMANCE CRITERIA
replacement	1.2 Task instruction is interpreted and vehicle to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for engine removal and replacement are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 ***Tools and equipment*** required for engine removal and replacement are identified according to manufacturer specifications
2. Remove engine assembly and inspect engine and associated components	2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and workplace safety procedures 2.2 Vehicle is prepared for engine removal according to workplace procedures and safety and environmental requirements 2.3 ***Engine and associated components*** are identified and inspected according to manufacturer specifications 2.4 ***Engine*** is removed according to workplace procedures, manufacturer specifications and safety requirements, and without causing damage to components, tools or equipment 2.5 Engine and associated component inspection results are recorded
3. Replace engine assembly	3.1 Engine and associated components are prepared for assembly 3.2 Engine is replaced according to workplace procedures, manufacturer specifications and safety requirements, and without causing damage to components, tools or equipment 3.3 Engine fluid levels are checked and topped up with the appropriate lubricant and coolant according to manufacturer specifications and procedures 3.4 Engine and vehicle is tested for correct operation
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and engine or vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 4.3 Tools and equipment are checked and stored in a condition ready for use according to workplace procedures, or tagged and reported where necessary 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance criteria and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of engine information and engine removal and replacement procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace engines • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• read and interpret numerical information in engine information • use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate ratios and volumes.
Planning and organising skills to:	• plan own work requirements and prioritise actions to complete engine removal and replacement.
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.
Technology skills to:	• set up and operate equipment and tools required to complete engine removal and replacement.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental	• information about key aspects of work health and safety

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requirements must include:	(WHS), occupational health and safety (OHS) and environmental requirements, including: • use of personal protective equipment, including safety glasses, ear protection and safety footwear • use of hand tools and lifting equipment • collection and disposal of used engine lubricants and coolant.
Tools and equipment must include:	• engine lifting equipment and related special tools.
Engine and associated components must include:	• cooling system components • electrical system components • exhaust system components • fuel system components.
Engine must include:	• an engine in a front engine, rear wheel drive vehicle.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTE006 Remove and replace conventional engine assemblies

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and replace at least one engine assembly from a conventional rear wheel drive vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of safety glasses, ear protection and safety footwear
  - use of engine lifting equipment
  - collection and disposal of used engine lubricants and coolant
- types, application and basic operation of engines, including:
  - multi-cylinder configurations
  - petrol and diesel classifications
  - engine lubrication requirements, including types and classifications of engine lubricants
- engine assembly removal procedures
- engine assembly and associated component inspection procedures, including procedures for inspecting:
  - cooling system components
  - electrical system components
  - exhaust system components
  - fuel system components
- engine assembly replacement procedures, including pre-startup checks and post-startup checks

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- work area clean-up and maintenance requirements.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and replaced the engine assembly, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- an operable vehicle with rear wheel drive
- automotive tools, engine assembly lifting equipment and attachments
- engine oil
- engine coolant.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTE007 Dismantle and assemble single cylinder four-stroke petrol engines

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to dismantle and reassemble a single cylinder four-stroke engine. It requires the learner to plan and prepare the task; dismantle the engine and inspect the components; reassemble the engine and check the engine operation; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to dismantle and	1.1 ***Safety and environmental requirements*** are sourced and

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ELEMENTS	PERFORMANCE CRITERIA
re-assemble a single cylinder four-stroke petrol engine	interpreted 1.2 Task instruction is interpreted and engine to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for engine dismantle and assembly are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 ***Tools and equipment*** required for dismantling and assembling four-stroke petrol engine are identified according to manufacturer specifications
2. Dismantle engine and clean its components	2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements 2.2 Engine is cleaned according to manufacturer specifications and workplace procedures 2.3 ***Engine*** is dismantled without causing damage to components, tools or equipment 2.4 Engine components are cleaned and arranged for identification according to workplace procedures
3. Identify, inspect and measure engine components	3.1 Measuring equipment and tools are selected and checked according to manufacturer specifications and workplace safety procedures 3.2 Engine components are measured and results compared against manufacturer specifications 3.3 Engine bearing information is sourced and interpreted, and engine bearing type and associated loads are identified 3.4 Information on engine seals, sealants and gaskets is sourced and interpreted, and engine seals, sealants and gaskets are identified 3.5 Engine component inspection results are recorded
4. Inspect engine cooling system and components and identify type	4.1 Information on the function, type, and components of cooling system is sourced and interpreted 4.2 Cooling system components are identified and inspected according to manufacturer specifications 4.3 Cooling system component inspection results are recorded
5. Re-assemble engine and perform operational tests	5.1 Engine components are prepared for assembly according to manufacturer specifications and safety and environmental requirements 5.2 Engine is assembled according to manufacturer specifications, and without causing damage to components, tools and equipment 5.3 Engine is tested for correct assembly and operation 5.4 Engine assembly and testing procedures are recorded

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ELEMENTS	PERFORMANCE CRITERIA
6. Complete work processes	6.1 Final inspection is made to ensure work meets task instruction and workplace standards, and engine is presented ready for use or storage according to workplace procedures 6.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 6.3 Tools and equipment are checked and stored in a condition ready for use according to workplace procedures, or tagged and reported where necessary 6.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of vehicle engine information and engine dismantle and reassembly procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely dismantle and assemble a single cylinder four-stroke engine • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• read and interpret numerical information in engine information • use specialist tools and measuring equipment correctly, including verniers and micrometers, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters) • use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate clearances and ratios.

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Skills	Description
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes.
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
	  • use of safety glasses, ear protection and safety footwear
	  • use of engine dismantling and re-assembly equipment
	  • collection and disposal of used engine lubricants and coolant.

Tools and equipment must include:	• micrometers and other measurement instruments • torque wrench.
Engine must include one or more of the following:	• operational single cylinder four-stroke petrol engine with air/direct cooling • complete engine assembly with carburettor, manifold, ignition system and flywheel.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTE007 Dismantle and assemble single cylinder four-stroke petrol engines

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- dismantle and assemble at least two different single cylinder four-stroke petrol engines.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of safety glasses, ear protection and safety footwear
  - use of engine dismantling and re-assembly equipment
  - collection and disposal of used engine lubricants and coolant
- types of engines and engine operating principles for:
  - four and two-stroke engines
  - single and multi-cylinder configuration
- construction and operating principles of single cylinder four-stroke engine and functions of their major components
- functions of the lubricating system
- components of the lubricating system and their function
- functions of the cooling system
- components of the cooling system and their functions
- types and application of:
  - seals
  - gaskets
  - bearings
- dismantling procedures for engines, including:
  - bolt loosening sequences

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  - procedures for noting component positions
- measurement and calculation methods for:
  - piston to bore and connecting rod bearing clearance
  - swept volume
  - clearance volume
  - compression ratio and engine capacity
- reassembly procedures for engines, including:
  - bolt tightening sequences and torque requirements
  - piston ring compression procedures
- work area clean-up and maintenance requirements.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engines that they have dismantled and assembled, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two different single cylinder four-stroke petrol engines
- tools and measuring instruments, including lifting equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTE008 Dismantle and assemble multi-cylinder four-stroke petrol engines

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to dismantle and reassemble a multi-cylinder four-stroke engine. It requires the learner to plan and prepare the task; dismantle the engine and inspect the components; reassemble the engine and check the engine operation; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to dismantle and	1.1 ***Safety and environmental requirements*** are sourced and

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ELEMENTS	PERFORMANCE CRITERIA
re-assemble a multi-cylinder four-stroke petrol engine	interpreted 1.2 Task instruction is interpreted and engine to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for engine dismantle and assembly are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 ***Tools and equipment*** required for dismantling and assembling multi-cylinder four-stroke petrol engine are identified according to manufacturer specifications
2. Dismantle engine and clean its components	2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements 2.2 Engine is cleaned according to manufacturer specifications and workplace procedures 2.3 ***Engine*** is dismantled without causing damage to components, tools or equipment 2.4 Engine components are cleaned and arranged for identification according to workplace procedures
3. Identify, inspect and measure engine components	3.1 Measuring equipment and tools are selected and checked according to manufacturer specifications and workplace safety procedures 3.2 Engine and components are measured and results compared against manufacturer specifications 3.3 Engine bearing information is sourced and interpreted, and engine bearing type and associated loads are identified 3.4 Information on engine seals, sealants and gaskets is sourced and interpreted, and engine seals, sealants and gaskets are identified 3.5 Engine component inspection results are recorded
4. Inspect engine cooling system and components and identify type	4.1 Information on the function, type and components of cooling system is sourced and interpreted 4.2 Cooling system components are identified and inspected according to manufacturer specifications 4.3 Cooling system component inspection results are recorded
5. Re-assemble engine and perform operational tests	5.1 Information on engine seals, sealants and gaskets is sourced and interpreted 5.2 Engine components are prepared for assembly according to manufacturer specifications and safety and environmental requirements 5.3 Engine is re-assembled according to manufacturer specifications, and without causing damage to components, tools and equipment

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ELEMENTS	PERFORMANCE CRITERIA
	5.4 Engine is tested for correct assembly and operation 5.5 Engine re-assembly and testing procedures are recorded
6. Complete work processes	6.1 Final inspection is made to ensure work meets task instruction and workplace standards, and engine is presented ready for use or storage according to workplace procedures 6.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 6.3 Tools and equipment are checked and stored in a condition ready for use according to workplace procedures, or tagged and reported where necessary 6.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of vehicle engine information and engine dismantle and reassembly procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely dismantle and assemble a multi-cylinder four-stroke engine • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• read and interpret numerical information in engine information • use specialist tools and measuring equipment correctly, including verniers, micrometers and torque wrenches, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters)

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Skills	Description
	• use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate clearances and ratios.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes.
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
	  • use of safety glasses, ear protection and safety footwear
	  • use of engine dismantling and re-assembly equipment
	  • collection and disposal of used engine lubricants and coolant.

Tools and equipment must include:	• micrometers and other measurement instruments • torque wrench.

Engine must include one or more of the following:	• operational multi-cylinder four-stroke petrol engine with:
	  • 2, 4, 6 or 8 cylinder configurations
	  • overhead valve with push rods or overhead camshaft
	• complete multi-cylinder four-stroke engine assembly with carburettor, manifold, ignition system and flywheel.

Unit Mapping Information

No equivalent unit.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTE008 Dismantle and assemble multi-cylinder four-stroke petrol engines

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- dismantle and assemble at least two different multi-cylinder four-stroke petrol engines.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of safety glasses, ear protection and safety footwear
  - use of engine dismantling and re-assembly equipment
  - collection and disposal of used engine lubricants and coolant
- types of engines and engine operating principles for:
  - four and two-stroke engines
  - single and multi-cylinder configuration, including straight, vee and horizontally-opposed engine configurations
- construction and operating principles of multi-cylinder four-stroke engine and functions of their major components
- functions of the lubricating system
- components of the lubricating system and their function, including:
  - sump
  - oil pumps
  - oil filters
  - oil galleries
- functions of the cooling system
- components of the cooling system and their function, including:
  - engine cooling galleries

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    - radiators and hoses
    - thermostats
- types and applications of:
    - seals
    - gaskets
    - bearings
- dismantling procedures for engines, including:
    - bolt loosening sequences
    - procedures for noting component positions and order
- measurement and calculation methods for:
    - piston to bore and connecting rod bearing clearance
    - swept volume
    - clearance volume
    - compression ratio and engine capacity
- reassembly procedures for engines, including:
    - bolt tightening sequences and torque requirements
    - piston ring compression procedures
    - procedures for fitting pistons in bores in pairs
- work area clean-up and maintenance requirements.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engines they have dismantled and re-assembled, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two different multi-cylinder four-stroke petrol engines
- tools and measuring instruments, including lifting equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTE009 Remove and replace engine cylinder heads

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to remove and replace an engine cylinder head. It requires the learner to plan and prepare the task; remove and dismantle the cylinder head, inspect the components, and reassemble and replace the cylinder head; check the engine operation; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Engines

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and replace an engine	1.1 ***Safety and environmental requirements*** are sourced and interpreted

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ELEMENTS	PERFORMANCE CRITERIA
cylinder head	1.2 Task instruction is interpreted and engine assembly to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for engine cylinder head removal and replacement are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 ***Tools and equipment*** required for removing and replacing an engine cylinder head are identified according to manufacturer specifications
2. Remove engine cylinder head	2.1 Tools, equipment and materials are selected and checked according to manufacturer procedures 2.2 ***Engine cylinder head*** is removed according to safety and environmental requirements, and without causing damage to components, tools or equipment 2.3 Removal procedures are recorded
3. Clean, dismantle and inspect engine cylinder head	3.1 Cleaning methods and materials are selected and checked according to manufacturer specifications and workplace procedures 3.2 Engine cylinder head is cleaned according to safety and environmental requirements 3.3 ***Engine cylinder head is dismantled*** without causing damage to components, tools or equipment 3.4 Engine cylinder head and components are cleaned and arranged for identification 3.5 Engine cylinder head and components are measured and results compared against manufacturer specifications 3.6 Engine cylinder head and components inspection results are recorded
4. Reassemble and replace engine cylinder head	4.1 Engine cylinder head and components are prepared for assembly according to manufacturer specifications and safety requirements 4.2 Engine cylinder head is assembled according to manufacturer specifications and workplace procedures, and without causing damage to components, tools or equipment 4.3 ***Engine cylinder head is replaced*** onto engine assembly according to manufacturer specifications and workplace procedures, and without causing damage to components, tools or equipment 4.4 Engine is tested for correct assembly and operation
5. Complete work processes	5.1 Final inspection is made to ensure work meets task instruction and workplace standards, and engine is presented ready for use or

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ELEMENTS	PERFORMANCE CRITERIA
	storage according to workplace procedures 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 5.3 Tools and equipment are checked and stored in a condition ready for use according to workplace procedures, or tagged and reported where necessary 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of vehicle engine information and engine cylinder head removal, dismantle, reassembly and replacement procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace engine cylinder head • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• read and interpret numerical information in engine information • use specialist tools and measuring equipment correctly, including feeler gauges, verniers, micrometers and torque wrenches, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters) • use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate length, volume, clearances and ratios.
Planning and organising	• plan own work requirements and prioritise actions to achieve required outcomes.

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Skills	Description
skills to:	
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.
Technology skills to:	• set up and operate equipment and tools required to remove and replace an engine cylinder head.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
	  • use of safety glasses, ear protection and safety footwear
	  • use of engine cylinder head removal, dismantling, reassembly and replacement equipment
	  • collection and disposal of used engine lubricants and coolant.

Tools and equipment must include:	• automotive hand tools and cylinder head lifting equipment and attachments.
Engine cylinder head must include:	• the cylinder head of a multi-cylinder engine assembly, including all operational fitting attachments.
Engine cylinder head is dismantled must include:	• removing the valve operating mechanisms and valves from the cylinder head.
Engine cylinder head is replaced must include	• correctly torqueing cylinder head bolts and associated component retaining bolts

Unit Mapping Information

No equivalent unit.

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Links

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Assessment Requirements for AURTTE009 Remove and replace engine cylinder heads

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly remove and replace at least two different cylinder heads.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of safety glasses, ear protection and safety footwear
  - use of cylinder head removal and replacement equipment
  - collection and disposal of used engine lubricants and coolant
- types of engines and engine operating principles for:
  - four and two-stroke engines
  - single and multi-cylinder configuration
  - petrol and diesel classification
- construction, function and operating principles of major engine components
- component lubricating systems, including:
  - principles and function
  - splash and pressure systems, including system components
- engine cooling systems, including:
  - principles and function
  - air-cooled and water-cooled systems, including system components
- types and application of:
  - seals
  - gaskets

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  - bearings
- measurement and calculation methods for:
  - swept volume
  - clearance volume
  - compression ratio and engine capacity
- engine cylinder head removal procedures
- engine cylinder head dismantling procedures
- engine cylinder head inspection procedures, including testing for warping
- engine cylinder reassembly procedures
- engine cylinder head replacement procedures, including methods for torqueing cylinder head to engine
- work area clean-up and maintenance requirements.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having removed and replaced engine cylinder heads, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two different vehicle or stand-mounted operable engines
- tools and measuring instruments
- cylinder head lifting equipment and attachments.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTF002 Inspect and service diesel fuel injection systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service diesel fuel injection systems. It involves preparing for the task, inspecting the fuel injection system for leaks, inspecting the air filter, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The diesel fuel injection systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, motorcycles, mobile plant or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical – Fuel Systems

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service diesel fuel injection system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect diesel fuel injection system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service diesel fuel injection system	3.1 ***Service*** and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures, including engine start-up check for leaks and operation
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to diesel fuel injection systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• calculate liquid volumes and service schedule intervals using basic mathematical operations, including addition and subtraction.
Problem solving skills to:	• refer problems outside area of responsibility to appropriate person.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with high pressure diesel fuel systems
	  • working with high voltage diesel fuel injectors
	  • working with stored fuel pressures
	  • engine start-up and shut-down
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from fuel systems.

Service must include**:**	• replacing fuel filters • servicing sedimenter filters • bleeding fuel systems as required • servicing air filters.

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Unit Mapping Information

Equivalent to AURTTF2002 Service diesel fuel injection systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTF002 Inspect and service diesel fuel injection systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service a diesel fuel injection system on two different vehicles or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing diesel fuel injection systems, including procedures for:
  - working with high pressure diesel fuel systems
  - working with high voltage diesel fuel injectors
  - working with stored fuel pressures
  - engine start-up and shut-down
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from fuel systems
- application, purpose and operation of air filter and air intake housing and ducting
- identification and function of mechanically controlled diesel fuel injection system and components, including:
  - types and applications of fuels, including diesel and biofuels
  - fuel tank and lines
  - fuel filters and sedimenter filters
  - fuel supply pumps
  - injection pumps, including:
    - in-line
    - rotary

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  - injector pipes
  - injectors
  - overflow or leak-off pipes
- identification and function of electronic diesel fuel injection systems and common rail fuel systems and components, including:
  - fuel tank and lines
  - fuel filters and sedimenter filter
  - fuel supply pumps
  - injection pumps
  - pressure and injector pipes
  - fuel rail
  - injectors
  - overflow or leak-off pipes
  - electronic control unit and sensors
- inspection procedures for diesel fuel injection systems, including procedures relating to leaks, damaged piping and sedimentary sight glasses
- service and adjustment procedures for diesel fuel injection systems, including:
  - servicing sedimenter filter
  - replacing fuel filter
  - bleeding fuel system as required
  - servicing air filter and air intake housing and ducting
  - engine speed adjustments as required and operational testing
- post-service testing procedures for diesel fuel injection system.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the diesel fuel injection systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer diesel fuel injection system specifications
- two different vehicles or machinery with diesel fuel injection systems requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing diesel fuel injection systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTF003 Overhaul diesel fuel injection system components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return diesel fuel injection system components to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the diesel fuel injection system components, carrying out the overhaul procedures, reassembling and testing the diesel fuel injection system components, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The diesel fuel injection systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery, marine vessels or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Fuel Systems

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle diesel fuel injection system components	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate diesel fuel injection system components	2.1 Components are dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked according to manufacturer procedures 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
4. Assemble components	4.1 Components are assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of components is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and components are presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for fuel system components efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking fuel system component specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations,

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Skills	Description
	and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure fuel system components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers and micrometers • use specialised fuel system component overhaul equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for using:
	  • specialised fuel system component overhaul tools, equipment and machinery
	  • chemicals and toxic cleaning substances
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from fuel injection systems.

Unit Mapping Information

Equivalent to AURTTF4003 Overhaul diesel fuel injection systems

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Links

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Assessment Requirements for AURTTF003 Overhaul diesel fuel injection system components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul the following diesel fuel injection system components:
  - two different diesel fuel high pressure pumps
  - two different sets of diesel fuel injectors.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling diesel fuel injection system components, including procedures for using:
  - specialised fuel system component overhaul tools, equipment and machinery
  - chemicals and toxic cleaning substances
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from fuel injection systems
- types, characteristics and operating principles of diesel fuel injection systems and associated components
- diesel fuel injection system component overhaul procedures, including:
  - methods for cleaning and preparing components for overhaul
  - component dismantling procedures
  - component inspection, measuring and evaluation procedures, including methods for measuring and calculating tolerances and clearances
  - component repair and adjustment procedures, including:
    - diesel fuel low pressure pumps

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    - diesel fuel high pressure pumps
    - diesel fuel injectors
  - component assembly procedures, including procedures for measuring and calculating tolerances, and adjusting components
- post-overhaul testing procedures for diesel fuel injection system components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the diesel fuel injection systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer diesel fuel injection system component specifications
- diesel fuel injection system components specified in the performance evidence and requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting diesel fuel injection system components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTF005 Diagnose and repair engine forced-induction systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in engine forced-induction systems. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. Forced-induction systems include those in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical – Fuel Systems

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
1. Prepare to diagnose and repair a forced-induction system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose a forced-induction system	2.1 ***Diagnostic tests*** are carried out according to workplace procedures and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Repair a forced-induction system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or system 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and system or vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking engine forced-induction specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure engine forced-induction components and use basic mathematical operations, including addition, subtraction, multiplication and division and subtraction, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment including dial indicator, vacuum and pressure gauges, and temperature gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Diagnostic tests must include:	• assessing oil supply and return system • assessing intake and exhaust system for leaks and blockages • assessing turbocharger cooling system • testing turbocharger boost air pressure.
Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with high

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	temperature exhaust and intake system components.

Unit Mapping Information

Equivalent to AURTTF3005 Inspect and repair engine forced induction systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTF005 Diagnose and repair engine forced-induction systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a turbocharger fault in an engine forced-induction system
- diagnose and repair a fault in two of the following components of engine forced-induction systems:
  - variable turbocharger
  - compound turbocharger
  - waste-gate actuator
  - intercooler
  - supercharger.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing engine forced-induction systems, including procedures for working with high temperature exhaust and intake system components
- operating principles of engine forced-induction systems and associated components, including volumetric efficiency
- application, purpose and operation of engine forced-induction systems and components, including:
  - turbochargers, including:
    - twin scroll
    - twin turbocharger
    - turbo compounding

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    - variable geometry turbocharger
    - waste-gate operation
    - lubrication and cooling
    - intercooler operation, including air to air and water to air
  - supercharger operation
- diagnostic testing procedures for engine forced-induction systems, including:
  - intake manifold pressure and vacuum testing
  - intake and exhaust system leak testing
  - turbo boost air pressure
  - intercooler pressure and temperature checks, types include air to air and air to water
  - oil supply
  - oil return to sump
  - turbocharger waste-gate testing
  - visual inspection for oil leakage
  - turbine rotating assembly end float and axial movement
- repair procedures for engine forced-induction systems, including procedures for:
  - removing and replacing turbochargers
  - testing, removing, replacing and adjusting waste-gates
- post-repair testing procedures for engine forced-induction systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine forced-induction systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- manufacturer engine forced-induction system specifications
- one vehicle or machinery with engine forced-induction systems and a fault in turbocharger
- diagnostic equipment for engine forced-induction systems, including dial indicator, vacuum and pressure gauges, and temperature gauges
- tools, equipment and materials appropriate for repairing engine forced-induction systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTF007 Overhaul carburettor fuel system components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return carburettor fuel system components to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the carburettor fuel system components, carrying out the overhaul procedures, reassembling and testing the carburettor fuel system components, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The carburettor fuel systems include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Fuel Systems

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle carburettor fuel system components	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate carburettor fuel system components	2.1 Components are dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble components	4.1 Components are assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of components is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace procedures and safety and environmental requirements, and any

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and components are presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for carburettor fuel system components efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking carburettor fuel system component specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.

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Skills	Description
Numeracy skills to:	• measure carburettor fuel system components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers and micrometers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for using:
	  • specialised fuel system component overhaul tools, equipment and machinery
	  • chemicals and toxic cleaning substances
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from fuel systems.

Unit Mapping Information

Equivalent to AURTTF4007 Overhaul petrol fuel system components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTF007 Overhaul carburettor fuel system components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul the following carburettor fuel system components:
  - two different multi-barrel carburettors
  - one of the following:
    - single barrel carburettor
    - mechanical fuel pump.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling carburettor fuel system components, including procedures for using:
  - specialised fuel system component overhaul tools, equipment and machinery
  - chemicals and toxic cleaning substances
- environmental requirements, including procedures for trapping, storing and disposing of fluids from fuel systems
- types, characteristics and operating principles of carburettor fuel systems and associated components
- carburettor fuel system component overhaul procedures, including:
  - methods for cleaning and preparing components for overhaul
  - component dismantling procedures
  - component inspection, measuring and evaluation procedures, including methods for measuring and calculating tolerances and clearances

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- component repair and adjustment procedures, including:
  - mechanical fuel pumps
  - single barrel carburettors, including fixed and variable venturi
  - multi-barrel carburettors, including fixed and variable venturi
- component assembly procedures, including procedures for measuring and calculating tolerances, and adjusting components
- post-overhaul testing procedures for carburettor fuel system components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the carburettor fuel system components that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer carburettor fuel system component specifications
- carburettor fuel system components specified in the performance evidence and requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting carburettor fuel system components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTJ003 Remove and replace wheel and tyre assemblies

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to remove and replace wheel and tyre assemblies. It requires the learner to plan and prepare the task; identify wheel and tyre assemblies; remove wheel and tyre assemblies; inspect components and identify their function; replace the wheel and tyre assembly; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Wheels and Tyres

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and	1.1 ***Safety requirements*** are sourced and interpreted

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ELEMENTS	PERFORMANCE CRITERIA
replace wheel and tyre assemblies	1.2 Task instruction is interpreted and vehicle wheel and tyre assemblies to be worked on are identified 1.3 Manufacturer specifications and workplace procedures for removing and replacing wheel and tyre assembly are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 ***Tools and equipment*** required for wheel and tyre assembly removal and replacement are identified according to manufacturer specifications
2. Remove and inspect vehicle wheel and tyre assemblies	2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements 2.2 ***Vehicle*** is prepared for wheel removal according to workplace procedures and safety requirements 2.3 ***Wheel and tyre assemblies*** are removed according to workplace procedures and manufacturer specifications, and without causing damage to components, tools or equipment 2.4 Wheel and tyre assemblies are identified and inspected according to manufacturer specifications 2.5 Wheel and tyre assembly inspection results are recorded
3. Replace wheel and tyre assemblies	3.1 Wheel and tyre assemblies are prepared for replacement 3.2 Wheel and tyre assemblies are replaced according to workplace procedures, manufacturer specifications and safety requirements without causing damage to components, tools or equipment 3.3 Wheel and tyre assembly on vehicle is checked for correct operation
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle wheels and tyres are presented ready for use or storage according to workplace procedures 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 4.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of wheel and tyre assembly information and assembly removal and replacement procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace wheel and tyre assemblies • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• read and interpret metric and imperial systems of measurement • read and interpret numerical information in wheel and tyre identification codes • use specialist tools correctly, including pressure gauges, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. kPa for kilopascals) • use basic mathematical operations, including addition and subtraction, to calculate length.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes.
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.
Technology skills to:	• set up and operate equipment and tools required to remove and replace wheel and tyre assemblies.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• information about key aspects of work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
	  • use of personal protective equipment, including safety glasses, ear protection and safety footwear
	  • use of hand tools and lifting and supporting equipment
	  • application of procedures for handling wheel and tyre assemblies.

Tools and equipment must include:	• automotive hand tools • vehicle lifting and supporting equipment, including wheel chocks.
Vehicles must include one or more of the following:	• passenger motor vehicle • motor cycle • constructed vehicle.
Wheel and tyre assemblies must include:	• one vehicle fitted with steel wheels • one vehicle fitted with alloy wheels.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTJ003 Remove and replace wheel and tyre assemblies

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly remove and replace the wheel and tyre assemblies of at least two different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools and lifting equipment
  - procedures for handling wheel and tyre assemblies
- types and application of wheel assemblies, including:
  - stamped or pressed steel wheels
  - alloy wheels
  - wheel studs and nuts
  - tyres, including cross-ply and radial tyres
- inspection procedures for tyre and wheel assemblies, including wheel inspection and tyre wear
- removal and replacement procedures and precautions
- tyre air pressure setting and test procedures
- work area clean-up and maintenance requirements.

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Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed and replaced wheel and tyre assemblies, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- a vehicle fitted with steel wheels
- a vehicle fitted with alloy wheels
- automotive hand tools and lifting equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTJ011 Balance wheels and tyres

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to balance automotive wheels and tyres. It involves identifying and confirming work requirements; preparing for the work; inspecting, balancing and refitting wheel and tyre assemblies; and completing workplace processes and documentation.

It applies to those working within the automotive light vehicle service and repair or light vehicle wheel alignment industry. The wheels and tyres include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery, motorcycles or trailers.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical – Wheels and Tyres

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare to balance wheels and tyres	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret wheel balancing information from manufacturer specifications 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies 1.4 Identify tools, equipment and materials required for the job and examine for serviceability
2. Conduct wheel and tyre	2.1 Carry out wheel and tyre pre-balance inspection according to manufacturer specifications, workplace procedures and workplace

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pre-balance inspection	health and safety requirements 2.2 Report inspection findings according to workplace procedures, including recommendations for necessary repair or replacement
3. Carry out balancing procedures	3.1 Inspect wheel balancing machine according to manufacturer specifications, workplace procedures and safety requirements 3.2 Balance wheel according to manufacturer specifications, workplace procedures and safety requirements without causing damage to wheel or tyre
4. Complete work processes	4.1 Carry out final inspection to ensure work meets workplace expectations and vehicle and wheels are ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Examine and store tools and equipment according to workplace procedures 4.4 Complete workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of balancing wheels and tyres information efficiently
Reading skills to:	• read and interpret information from manufacturer specifications and workshop literature relating to wheel balance procedures and specifications
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used
Numeracy skills to:	• measure wheel balancing weights • use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications • calculate balance weights in metric and imperial units of measurement • set and calibrate wheel balancing machine
Technology skills to:	• operate wheel balance machines

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURTTJ011 Balance wheels and tyres (Release 1)	AURTTJ001 Balance wheels and tyres (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Removal of references to OHS requirements. Removal of range of conditions. Addition of assessor requirements.	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTJ011 Balance wheels and tyres

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate balancing of wheels and tyres that safely follows workplace procedures to meet required outcomes. This includes:

- balancing four different wheels and tyres, in which work must involve:
  - selecting appropriate methods and techniques to balance wheels and tyres
  - conducting wheel and tyre pre-balance inspection for damage and excessive run-out

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures for balancing wheels and tyres, including:

- how to locate and interpret manufacturers specifications or equivalent information and workplace procedures for balancing wheels and tyres
- the following workplace health and safety requirements and procedures relating to balancing wheels and tyres:
  - lifting and supporting vehicles and wheels
  - working with balancing machines, including rotating components and flying objects
- environmental requirements relating to balancing wheels and tyres
- procedures for pre-balance inspection of wheels and tyres
- workplace housekeeping and documentation procedures

Wheel balancing machinery, including:

- off vehicle balancers
- on vehicle balancers

Wheel balancing equipment and concepts, including:

- tyre and wheel run-out

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- static and dynamic balance
- the following out of balance effects on wheels:
  - wheel hop or tramp
  - wheel shimmy
  - vibration
  - tread wear
- types and applications of wheel weights
-

Assessment Conditions

The assessment must:

- include access to:
  - an automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to balancing wheels and tyres activity
  - workplace procedures relating to balancing wheels and tyres activity
  - manufacturer wheel balancing specifications or equivalent documentation
  - four different wheels and tyres for balancing
  - wheel balancing machinery
  - two different vehicles or machinery requiring wheel/tyre balancing
  - tools, equipment and materials appropriate for balancing wheels and tyres
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor Requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTJ012 Remove, inspect and refit wheel hubs and associated brake components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to remove, inspect and refit wheel hubs and associated brake components during the rectification of faults in steering and suspension systems. It involves identifying and confirming work requirements, preparing for the task, removing and refitting the wheel hubs and associated brake components, and completing workplace processes and documentation.

This unit applies to those working within the automotive service and repair industry. The hubs and associated brake components include those of light vehicles, four wheel drive vehicles or light commercial vehicles. This unit does not involve servicing or repairing braking systems.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical – Wheels and Tyres

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare to remove and refit wheel hubs and associated brake components	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret wheel hub and braking component removal, refitting and adjustment information 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies

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	1.4 Identify tools, equipment and materials required for the job and examine for serviceability
2. Remove and inspect wheel hubs and associated brake components	2.1 Identify components to be removed and remove according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements, and without causing damage to components or systems 2.2 Inspect components according to manufacturer specifications and workplace procedures 2.3 Report inspection findings and make recommendations for necessary repairs or replacements and adjustments according to workplace procedures
3. Refit and adjust wheel hubs and associated brake components	3.1 Obtain and interpret refitting information in order to identify refitting options required for the job 3.2 Fit and adjust wheel hubs and associated brake components according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements 3.3 Tighten wheel hub adjustment and wheel nuts according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Carry out final inspection to ensure correct assembly and operation, and ensure work meets workplace expectations and vehicle is ready for use 4.2 Clean work area and dispose of or recycle materials according to workplace procedures 4.3 Examine tools and equipment and store according to workplace procedures 4.4 Complete workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of wheel hub and braking components information efficiently
Reading skills to:	• read and interpret information from manufacturer specifications, workplace procedures and documentation when seeking removal, refitting and adjustment procedures and specifications
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making repair recommendations,

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	and recording parts and material used
Oral communication skills to	• clarify instructions • make repair recommendations
Numeracy skills to:	• interpret precision measuring tool scales • understand numerical divisions in metric and imperial units of measurement for tensioning fasteners
Technology skills to:	• use precision measuring equipment • operate fastener tensioning tools

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURTTJ012 Remove, inspect and refit wheel hubs and associated brake components (Release 1)	AURTTJ002 Remove, inspect and refit wheel hubs and associated brake components (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Removal of reference to OHS requirements. Removal of range of conditions. Changed from ‘repair’ to ‘refit’ in performance criteria. Addition of oral communication skills. Addition of assessor requirements.	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTJ012 Remove, inspect and refit wheel hubs and associated brake components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate removing, inspecting, refitting and adjusting the following wheel hubs safely according to workplace procedures to meet required outcomes:

- one disc brake hub and associated brake components
- one drum brake hub and associated brake components

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures relating to the removal, inspection and refitting of wheel hubs and brake components, including:

- how to locate and interpret manufacturer specifications or equivalent documentation, manufacturer procedures and workplace procedures for removing, inspecting and refitting wheel hubs and associated brake components
- the following workplace health and safety requirements relating to removing, inspecting and refitting wheel hubs and associated brake components, including procedures for:
  - lifting and supporting vehicles and wheel hubs
  - handling and controlling brake dust and brake fluids
- the following environmental requirements and procedures:
  - trapping, storing and disposing of brake dust and brake fluid
- procedures for removing, inspecting, refitting and adjusting wheel hubs and associated brake components, including:
  - brake bleeding
  - brake and park brake adjustment
  - wheel bearing lubrication and adjustment
- post-fitting procedures and checks of wheel hubs and associated brake components
- workplace housekeeping and documentation procedures

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Wheel hubs and associated brake components technical information, including:

- the purpose of:
  - discs, pads and brake calipers
  - drums, brake linings, wheel cylinders and hydraulic components
  - park braking devices
  - wheel bearing types
- the basic operation of the following braking systems:
  - hydraulic braking systems
  - mechanical braking systems
- the types and uses of brake hydraulic fluids and wheel bearing greases
-

Assessment Conditions

The assessment must:

- include access to:
  - an automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to remove, inspect and refit activity
  - workplace procedures relating to remove, inspect and refit activity
  - manufacturer specifications or equivalent documentation for wheel hubs and associated brake component
  - vehicle for removing and refitting the wheel hubs and associated brake components specified in the performance evidence
  - tools, equipment and materials appropriate for removing, inspecting and refitting wheel hubs and associated brake components
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Assessor Requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards

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Links

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AURTTK001 Use and maintain measuring equipment in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to select, use, maintain and store automotive measuring equipment. It involves selecting and maintaining measuring equipment, and using measuring equipment to determine length, width, angles, ovality, depth, out of square, clearances, run-out, pressure and temperature of automotive components and materials.

It applies to those working in all sectors of the automotive industry. This unit does not apply to electrical measuring equipment that measures voltage, resistance or current flow.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical – Tools and Equipment

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1 Select and use measuring equipment	1.1 Job requirements are determined from workplace instructions 1.2 Measuring equipment is selected to meet job requirements 1.3 Measuring equipment is checked for serviceability and calibration according to manufacturer and workplace procedures 1.4 Hazards associated with the work are identified and risks are managed 1.5 Measuring equipment is used according to manufacturer and ***safety requirements***
2 Service, maintain and store measuring equipment	2.1 Measuring equipment is serviced, calibrated and maintained according to workplace and manufacturer schedules and procedures to ensure safe and accurate operation, within scope of own responsibility 2.2 Damaged, worn or inaccurate measuring equipment is tagged and removed from the workplace and reported according to workplace procedures 2.3 Remaining measuring equipment is cleaned, checked and stored according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret measuring equipment information from manufacturer instruction manuals.
Writing skills to:	• legibly and accurately tag faulty measuring equipment • complete measuring equipment service and maintenance schedules.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate distance, area and volume • understand metric units of measurements and decimal

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Skills	Description
	increments.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including safe operating procedures for specific measuring equipment.

Unit Mapping Information

Equivalent to AURTTK2001 Use and maintain measuring equipment in an automotive workplace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTK001 Use and maintain measuring equipment in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- use and maintain each of the following pieces of measuring equipment:
  - inside and outside micrometers
  - vernier calipers
  - dial indicators
  - steel rulers
  - squares
  - straight edges
  - feeler gauges
  - pressure gauges
  - temperature gauges.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to using and maintaining measuring equipment, including safe operating procedures for specific measuring equipment
- types, uses, limitations and operation of measuring equipment specified in the performance evidence, including:
  - using metric and imperial units of measurement
  - using analogue and digital measuring equipment
- procedures for selecting measuring equipment suitable to job requirements
- identification and tagging procedures for faulty measuring equipment

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- basic maintenance, adjustment, calibration and storage procedures for measuring equipment.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the measuring equipment that they have used and maintained, e.g. repair orders with calculated tolerances.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- measuring equipment specified in the performance evidence requiring maintenance
- vehicles, components or materials that require the use of automotive measuring equipment
- material relevant to maintaining automotive measuring equipment, including:
  - measuring equipment operating instructions or manuals
  - relevant measuring equipment and adjusting or calibration equipment
  - tagging material.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTK002 Use and maintain tools and equipment in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to select, use, maintain and store tools and equipment in an automotive workplace.

It applies to those working in all sectors of the automotive industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical – Tools and Equipment

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Select and use tools and equipment	1.1 Job requirements are determined from workplace instructions 1.2 Tools and equipment are selected to meet job requirements

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Tools and equipment are checked for serviceability according to manufacturer and workplace procedures 1.4 Personal protective equipment (PPE) suitable for tools or equipment to be used is selected and checked for serviceability 1.5 Tools and equipment, including PPE, are used according to manufacturer procedures and ***safety requirements***
2. Service, maintain and store workplace tools and equipment	2.1 Tools and equipment are serviced, adjusted and maintained according to workplace and manufacturer schedules and procedures to ensure safe and accurate operation, within scope of own responsibility 2.2 Damaged or worn tools and equipment are tagged and removed from the workplace for and reported according to workplace procedures 2.3 Remaining tools and equipment are cleaned, checked and stored according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret work health and safety (WHS) and occupational health and safety (OHS) procedures in workplace and manufacturer literature • interpret information from manufacturer instruction manuals.
Writing skills to:	• legibly and accurately tag faulty tools and equipment • complete tool and equipment service and maintenance schedules.
Numeracy skills to:	• identify different size metric and imperial tools • understand the progression of fractions in imperial tools • use basic mathematical processes, including addition, subtraction, multiplication and division, to calculate distance, area and volume.

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Skills	Description
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• WHS and OHS requirements, including safe operating procedures for: • using specific tools and equipment • selecting and using PPE.

Unit Mapping Information

Equivalent to AURTTK2002 Use and maintain workplace tools and equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTK002 Use and maintain tools and equipment in an automotive workplace

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- use and maintain the following workplace tools and equipment:
  - five different hand tools
  - two different power tools
  - two different air tools
  - one piece of vehicle lifting equipment
  - one piece of vehicle supporting equipment.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to using and maintaining workplace tools and equipment, including procedures for:
  - using specific tools and equipment
  - selecting and using personal protective equipment (PPE)
- types, uses, limitations and operating procedures for hand and power tools, including:
  - sockets and ratchets
  - spanners, including ring spanners, open-ended spanners, combination spanners and flare nut spanners
  - wrenches, including torque wrenches and adjustable wrenches
  - oil filter removal tools
  - allen keys

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    - screwdrivers, including impact screwdrivers
    - pliers, including combination, adjustable, long nose, snap ring, side cutting and vice grip pliers
    - hammers
    - chisels and punches
    - hacksaws
    - files
    - bench grinders
    - presses
    - impact guns
    - air ratchets and blowguns
- types, characteristics, uses and limitations of workplace equipment, including:
    - vehicle lifting and supporting equipment, including:
        - jacks, including air jacks
        - jack stands
        - vehicle hoists
    - fasteners, including:
        - bolts
        - washers
        - nuts
        - studs
        - screws
    - specialised tools, including:
        - screw extractors
        - stud installation and removal tools
        - gear and bearing pullers
        - sealing and adhesive equipment
- procedures for selecting tools and equipment
- identification and tagging procedures for faulty tools and equipment
- basic maintenance and storage procedures for tools and equipment.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the tools and equipment that they have used and maintained, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- workplace hand and power tools and equipment as specified in the performance evidence
- PPE required to use workplace tools and equipment
- vehicles, components or materials that require the use of tools and equipment
- material relevant to maintaining workplace tools and equipment, including:
  - tool and equipment operating instructions or manuals
  - relevant tool and equipment adjusting or calibration equipment
  - tagging material.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL001 Inspect and service CNG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service compressed natural gas (CNG) fuel systems. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The CNG fuel systems include those of agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical – Alternative Fuels

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service CNG fuel system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with work are identified and risks are managed according to ***safety and environmental requirements*** 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect CNG fuel system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, safety requirements, and AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service CNG fuel system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, AS/NZS 2739, and safety and environmental requirements, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or system is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to CNG fuel systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate service schedule intervals.
Problem solving skills to:	• refer problems outside area of responsibility to appropriate person.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with a lighter-than-air flammable gas
	  • avoiding cold burns
	  • storing CNG
	• environmental requirements, including procedures for preventing loss of gas to atmosphere.

Unit Mapping Information

Equivalent to AURTTL3001 Inspect and service CNG fuel systems

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL001 Inspect and service CNG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the following compressed natural gas (CNG) fuel systems:
  - two different light vehicle CNG fuel systems

or

  - two different heavy commercial vehicle CNG fuel systems

or

  - two different forklift CNG fuel systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing CNG fuel systems, including procedures for:
  - working with a lighter-than-air flammable gas
  - avoiding cold burns
  - storing CNG
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- licensing requirements for working on CNG systems
- identification and function of CNG fuel system components
- basic operation of CNG fuel systems
- requirements of AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
- inspection procedures for CNG fuel systems, including:

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  - leakage check
  - CNG container identity
  - container life
  - container recertification date
  - container corrosion and damage
  - container attachment
  - automatic fuel shut-off device
  - manual valves
  - compartment and sub-compartment refuelling connection
  - refuelling interlock device
  - flexible piping and hoses
  - ground clearances
  - vehicle identification, including identification markers
- service and adjustment procedures for CNG fuel systems, including checking compliance of fuel system emissions
- post-service testing procedures for CNG fuel systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle CNG fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- ASNZS 2739 Natural gas (NG) fuel systems for vehicle engines
- manufacturer servicing schedules and vehicle CNG fuel system specifications
- vehicles and machinery specified in the performance evidence with operating CNG fuel systems requiring servicing

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- tools, equipment and materials appropriate for inspecting and servicing CNG fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL002 Diagnose and repair CNG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the compressed natural gas (CNG) fuel systems of vehicles or machinery. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The unit applies to CNG fuel systems in agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical – Alternative Fuels

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
1. Prepare to diagnose and repair CNG fuel system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose CNG fuel system	2.1 Diagnostic tests are performed according to workplace procedures and ***safety and environmental requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Repair CNG fuel system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, safety and environmental requirements, and AS/NZ 2739 Natural gas (NG) fuel systems for vehicle engines, and without causing damage to components or system 3.5 Post-repair testing is carried out according to workplace procedures and AS/NZ 2739 to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace expectations 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret Australian standards relating to repairing CNG fuel systems • interpret information from manufacturer and workshop literature when seeking CNG fuel system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace literature when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure CNG fuel system components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, including exhaust gas analyser

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • working with extremely cold and flammable gas

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	• storing CNG • environmental requirements, including procedures for preventing loss of gas to atmosphere.

Unit Mapping Information

Equivalent to AURTTL3002 Diagnose and repair CNG fuel systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL002 Diagnose and repair CNG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in two vehicles with different compressed natural gas (CNG) fuel systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing CNG fuel systems, including procedures for:
  - working with extremely cold and flammable gas
  - storing CNG
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- key requirements of AS/NZ 2739 Natural gas (NG) fuel systems for vehicle engines
- application, purpose and operating principles of CNG fuel systems and associated components, including:
  - mixers
  - regulators
  - fuel lock-off valves
  - filters
  - tanks
  - control valves and switches
- diagnostic testing procedures for CNG fuel systems, including:
  - mixers

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  - regulators
  - fuel lock-off valves
  - electronic control valves and switches
- repair procedures for CNG fuel systems, including procedures for removing, replacing and adjusting the systems
- post-repair testing procedures for CNG fuel systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the CNG fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer vehicle CNG fuel system specifications
- AS/NZ 2739 Natural gas (NG) fuel systems for vehicle engines
- two vehicles with different CNG fuel systems with faults
- diagnostic equipment for CNG fuel systems, including exhaust gas analyser
- tools, equipment and materials appropriate for repairing CNG fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL003 Install CNG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install compressed natural gas (CNG) fuel systems. It involves preparing for the task, selecting, installing, testing and adjusting the system for correct operation, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The CNG fuel systems include those of agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical – Alternative Fuels

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install CNG fuel system	1.1 Job requirements are determined from workplace instructions 1.2 CNG fuel system installation information is sourced and interpreted 1.3 Installation options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked according to manufacturer specifications and workplace procedures
2. Carry out installation activities	2.1 CNG fuel system is checked for correct application and components are checked for damage 2.2 ***CNG fuel system components*** are installed according to workplace procedures, manufacturer specifications, ***safety and environmental requirements*** and AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines, and without causing damage to components or systems 2.3 Installed ***CNG fuel system is tested*** for correct operation and required adjustments are made according to manufacturer specifications, workplace procedures, safety requirements, and AS/NZS 2739
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and system is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret Australian standards relating to installing CNG fuel systems • interpret manufacturer and workshop literature when seeking CNG system installation procedures and specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording parts and material used.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to measure components and vehicle when calculating installation positions and material lengths • interpret gauges of testing equipment.
Digital literacy skills to:	• navigate computer programs in testing equipment and scan tools while testing and adjusting fuel system.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• determine most appropriate method of installing fuel system while meeting relevant Australian standards.
Technology skills to:	• use specialist tooling, measuring equipment and computerised equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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CNG fuel system components must include:	• fill valve and fill hose • fuel container and mounting • service line • vaporiser • regulator • safety lock-off devices • mixers or injectors • associated electrical and electronic system, including selector and safety switches • compliance plates.
Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with extremely cold and flammable gas • environmental requirements, including procedures for preventing loss of gas to atmosphere.
Testing CNG fuel system must include:	• system leak testing • exhaust gas analysis to ensure compliance with relevant emission control standards.

Unit Mapping Information

Equivalent to AURTTL3003 Install CNG fuel systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL003 Install CNG fuel systems

Modification History

Release	Comment
Release 1	AURTTL3003 Install CNG fuel systems

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- install one complete compressed natural gas (CNG) fuel system in a vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing CNG fuel systems, including procedures for working with extremely cold and flammable gas
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- requirements of AS/NZS 2739 Natural gas (NG) fuel systems, including:
  - containers and fuel system components
  - fuel service lines and materials
  - fuel control equipment
- Australian standard inspection, testing and commissioning requirements
- CNG system adjustment procedures, including exhaust gas analysis
- Australian standard certification, compliance plate, and marking and label requirements.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the CNG fuel systems that they have installed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
- manufacturer vehicle CNG system specifications
- one vehicle requiring installation of a CNG fuel system
- CNG installation kit, including:
  - fill valve and fill hose
  - fuel container and mounting
  - service line
  - vaporiser
  - regulator
  - safety lock-off devices
  - mixers or injectors
  - associated electrical and electronic system, including selector and safety switches
  - compliance plates
- testing equipment for CNG fuel systems, including CNG fuel leak testing equipment, including exhaust gas analyser
- tools, equipment and materials appropriate for installing CNG fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL004 Inspect and service LNG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service liquefied natural gas (LNG) fuel systems. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The LNG fuel systems include those of agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical – Alternative Fuels

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service LNG fuel system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with work are identified and risks are managed according to ***safety and environmental requirements*** 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect LNG fuel system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, safety requirements, and AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service LNG fuel system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, AS/NZS 2739, and safety and environmental requirements**,** and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or system is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to LNG fuel systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate service schedule intervals.
Problem solving skills to:	• refer problems outside area of responsibility to appropriate person.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with a lighter-than-air flammable gas
	  • avoiding cold burns
	  • storing LNG
	• environmental requirements, including procedures for preventing loss of gas to atmosphere.

Unit Mapping Information

Equivalent to AURTTL3004 Inspect and service LNG fuel system

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL004 Inspect and service LNG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the following liquefied natural gas (LNG) fuel systems:
  - two different light vehicle LNG fuel systems

or

  - two different heavy commercial vehicle LNG fuel systems

or

  - two different forklift LNG fuel systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing LNG fuel systems, including procedures for:
  - working with a lighter-than-air flammable gas
  - avoiding cold burns
  - storing LNG
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- licensing requirements for working on LNG systems
- identification and function of LNG fuel system components
- basic operation of LNG fuel systems
- requirements of AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
- inspection procedures for LNG fuel systems, including:

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  - leakage check
  - LNG container identity
  - container life
  - container recertification date
  - container corrosion and damage
  - container attachment
  - automatic fuel shut-off device
  - manual valves
  - compartment and sub-compartment refuelling connection
  - refuelling interlock device
  - flexible piping and hoses
  - ground clearances
  - vehicle identification, including identification markers
- service and adjustment procedures for LNG fuel systems, including checking compliance of fuel system emissions
- post-service testing procedures for LNG fuel systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle LNG fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
- manufacturer servicing schedules and vehicle LNG fuel system specifications
- vehicles and machinery specified in the performance evidence with operating LNG fuel systems requiring servicing

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- tools, equipment and materials appropriate for inspecting and servicing LNG fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL005 Diagnose and repair LNG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the liquefied natural gas (LNG) fuel systems of vehicles or machinery. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The unit applies to LNG fuel systems in agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical – Alternative Fuels

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential outcome**s.**	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcome**s.**	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair LNG fuel system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose LNG fuel system	2.1 Diagnostic tests are performed according to workplace procedures and ***safety and environmental requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Repair LNG fuel system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, safety and environmental requirements, and AS/NZ 2739 Natural gas (NG) fuel systems for vehicle engines, and without causing damage to components or system 3.5 Post-repair testing is carried out according to workplace procedures and AS/NZ 2739 to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace expectations 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret Australian standards relating to repairing LNG fuel systems • interpret information from manufacturer and workshop literature when seeking LNG fuel system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure LNG fuel system components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, including exhaust gas analyser.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with extremely cold and flammable gas
	  • storing LNG
	• environmental requirements, including procedures for preventing

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	loss of gas to atmosphere.

Unit Mapping Information

Equivalent to AURTTL3005 Diagnose and repair LNG fuel systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL005 Diagnose and repair LNG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in two vehicles with different liquefied natural gas (LNG) fuel systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing LNG fuel systems, including procedures for:
  - working with extremely cold and flammable gas
  - storing LNG
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- key requirements of AS/NZ 2739 Natural gas (NG) fuel systems for vehicle engines
- operating principles of LNG fuel systems and associated components
- application, purpose and operation of LNG fuel systems and components, including:
  - mixers
  - regulators
  - fuel lock-off valves
  - filters
  - tanks
  - control valves and switches
- diagnostic testing procedures for LNG fuel systems, including:
  - mixers

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  - regulators
  - fuel lock-off valves
  - electronic control valves and switches
- repair procedures for LNG fuel systems, including procedures for removing, replacing and adjusting the systems
- post-repair testing procedures for LNG fuel systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the LNG fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer LNG fuel system specifications
- AS/NZ 2739 Natural gas (NG) fuel systems for vehicle engines
- two vehicles with different LNG fuel systems with faults
- diagnostic equipment for LNG fuel systems, including exhaust gas analyser
- tools, equipment and materials appropriate for repairing LNG fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL006 Install LNG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install liquefied natural gas (LNG) fuel systems. It involves preparing for the task, selecting, installing, testing and adjusting the system for correct operation, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The LNG fuel systems include those of agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Alternative Fuels

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install LNG	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
fuel system	1.2 LNG fuel system installation information is sourced and interpreted 1.3 Installation options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Carry out installation activities	2.1 LNG fuel system is checked for correct application and components are checked for damage 2.2 ***LNG fuel system components*** are installed according to workplace procedures, manufacturer specifications, ***safety and environmental requirements*** and AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines**,** and without causing damage to components or systems 2.3 Installed ***LNG fuel system is tested*** for correct operation and required adjustments are made according to manufacturer specifications, workplace procedures, safety requirements, and AS/NZS 2739
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and system is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Reading skills to:	• interpret Australian standards relating to installing LNG fuel systems • interpret manufacturer and workshop literature when seeking LNG system installation procedures and specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording parts and material used.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to measure components and vehicle when calculating installation positions and material lengths • interpret gauges of testing equipment.
Digital literacy skills to:	• navigate computer programs in testing equipment and scan tools while testing and adjusting fuel system.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• determine most appropriate method of installing fuel system while meeting relevant Australian standards.
Technology skills to:	• use specialist tooling, measuring equipment and computerised equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

LNG fuel system components must include:	• fill valve and fill hose • fuel container and mounting • service line • vaporiser • regulator • safety lock-off devices • mixers or injectors • associated electrical and electronic system, including selector and safety switches

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	• compliance plates.
Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with extremely cold and flammable gas • environmental requirements, including procedures for preventing loss of gas to atmosphere.
Testing LNG fuel system must include:	• system leak testing • exhaust gas analysis to ensure compliance with relevant emission control standards.

Unit Mapping Information

Equivalent to AURTTL3006 Install LNG fuel systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL006 Install LNG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- install one complete liquefied natural gas (LNG) fuel system in a vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing LNG fuel systems, including procedures for working with extremely cold and flammable gas
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- requirements of AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines, including:
  - containers and fuel system components
  - fuel service lines and materials
  - fuel control equipment
  - inspection, testing and commissioning requirements
- Australian standard inspection, testing and commissioning requirements
- LNG system adjustment procedures, including exhaust gas analysis
- Australian standard certification, compliance plate, and marking and label requirements.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the LNG fuel systems that they have installed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
- manufacturer vehicle LNG system specifications
- one vehicle requiring installation of an LNG fuel system
- LNG installation kit, including:
  - fill valve and fill hose
  - fuel container and mounting
  - service line
  - vaporiser
  - regulator
  - safety lock-off devices
  - mixers or injectors
  - associated electrical and electronic system, including selector and safety switches
  - compliance plates
- testing equipment for LNG fuel systems, including exhaust gas analyser
- tools, equipment and materials for installing LNG fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL007 Inspect and service LPG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service liquefied petroleum gas (LPG) fuel systems. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The LPG fuel systems include those of agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical – Alternative Fuels

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service LPG fuel system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with work are identified and risks are managed according to ***safety and environmental requirements*** 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect LPG fuel system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, safety requirements, and AS/NZS 1425 LP Gas fuel systems for vehicle engines 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service LPG fuel system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, AS/NZS 1425, and safety and environmental requirements, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or system is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to LPG fuel systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate service schedule intervals.
Problem solving skills to:	• refer problems outside area of responsibility to appropriate person.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with heavier-than-air flammable gas
	  • avoiding cold burns
	  • storing LPG
	• environmental requirements, including procedures for preventing loss of gas to atmosphere.

Unit Mapping Information

Equivalent to AURTTL3007 Inspect and service LPG fuel systems

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL007 Inspect and service LPG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the following liquefied petroleum gas (LPG) fuel systems:
  - two different light vehicle LPG fuel systems

or

  - two different heavy commercial vehicle LPG fuel systems

or

  - two different forklift LPG fuel systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing LPG fuel systems, including procedures for:
  - working with heavier-than-air flammable gas
  - avoiding cold burns
  - storing LPG
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- licensing requirements for working on LPG systems
- identification and function of LPG fuel system components
- basic operation of LPG fuel systems
- requirements of AS/NZS 1425 LP Gas fuel systems for vehicle engines

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- inspection procedures for LPG fuel systems according to relevant Australian standards, including:
  - leakage check
  - fuel container life
  - container corrosion and attachment checks
  - accuracy of the automatic fuel limiter
  - operation of fuel containment system, including testing automatic fuel shut-off device
  - fuel control systems, including automatic fuel shut-off device and fuel selector
  - manual valves
  - compartment or sub-compartment
  - filler connection
  - hydrostatic relief valve
  - safety valve system
  - liquids
  - ground clearances
  - vehicle identification, including identification markers
- service and adjustment procedures for LPG fuel systems, including:
  - draining oil from converters
  - checking compliance of fuel system emissions
- post-service testing procedures for LPG fuel systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle LPG fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- workplace instructions
- AS/NZS 1425 LP Gas fuel systems for vehicle engines
- manufacturer servicing schedules and vehicle LPG fuel system specifications
- vehicles and machinery specified in the performance evidence with operating LPG fuel systems requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing LPG fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL008 Diagnose and repair LPG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the liquefied petroleum gas (LPG) fuel systems of vehicles or machinery. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The unit applies to LPG fuel systems in agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical – Alternative Fuels

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair LPG fuel system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose LPG fuel system	2.1 Diagnostic tests are performed according to workplace procedures, and ***safety and environmental requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Repair LPG fuel system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, safety and environmental requirements, and AS/NZ 1425 LP Gas fuel systems for vehicle engines, and without causing damage to components or system 3.5 Post-repair testing is carried out according to workplace procedures and AS/NZ 1425 to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace expectations 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret Australian standards relating to repairing LPG fuel systems • interpret information from manufacturer and workshop literature when seeking LPG fuel system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace literature when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure LPG fuel system components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, including exhaust gas analyser.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • working with extremely cold and flammable gas

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	• storing LPG • environmental requirements, including procedures for preventing loss of gas to atmosphere.

Unit Mapping Information

Equivalent to AURTTL3008 Diagnose and repair LPG fuel systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL008 Diagnose and repair LPG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in two vehicles with different liquefied petroleum gas (LPG) fuel systems.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing LPG fuel systems, including procedures for:
  - working with extremely cold and flammable gas
  - storing LPG
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- key requirements of AS/NZ 1425 LP Gas fuel systems for vehicle engines
- licensing requirements for working on LPG fuel systems
- application, purpose and operating principles of LPG fuel systems and associated components, including:
  - mixers
  - regulators
  - fuel lock-off valves
  - filters
  - tanks
  - control valves and switches
- diagnostic testing procedures for LPG fuel systems, including:

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  - mixers
  - regulators
  - fuel lock-off valves
  - electronic control valves and switches
- repair procedures for LPG fuel systems, including removing, replacing and adjusting the systems
- post-repair testing procedures for LPG fuel systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the LPG fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer LPG fuel system specifications
- AS/NZ 1425 LP Gas fuel systems for vehicle engines
- two vehicles with different LPG fuel systems with faults
- diagnostic equipment for LPG fuel systems, including exhaust gas analyser
- tools, equipment and materials appropriate for repairing LPG fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL009 Install LPG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install liquefied petroleum gas (LPG) fuel systems. It involves preparing for the task, selecting, installing, testing and adjusting the system for correct operation, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The LPG fuel systems include those of agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Alternative Fuels

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install LPG fuel system	1.1 Job requirements are determined from workplace instructions 1.2 LPG fuel system installation information is sourced and interpreted 1.3 Installation options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Carry out installation activities	2.1 LPG fuel system is checked for correct application and components are checked for damage 2.2 ***LPG fuel system components*** are installed according to workplace procedures, manufacturer specifications, ***safety and environmental requirements*** and AS/NZS 1425 LP Gas fuel systems for vehicle engines, and without causing damage to components or systems 2.3 Installed ***LPG fuel system is tested*** for correct operation and required adjustments are made according to manufacturer specifications, workplace procedures, safety requirements, and AS/NZS 1425
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and system is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret Australian standards relating to installing LPG fuel systems • interpret manufacturer and workshop literature when seeking LPG system installation procedures and specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording parts and material used.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to measure components and vehicle when calculating installation positions and material lengths • interpret gauges of testing equipment.
Digital literacy skills to:	• navigate computer programs in testing equipment and scan tools while testing and adjusting fuel system.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• determine most appropriate method of installing fuel system while meeting relevant Australian standards.
Technology skills to:	• use specialist tooling, measuring equipment and computerised equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

LPG fuel system components must include:	• fill valve and fill hose • fuel container and mounting • service line • vaporiser • regulator • safety lock-off devices • mixers or injectors • associated electrical and electronic system, including selector and

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	safety switches • compliance plates.
Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with extremely cold and flammable gas • environmental requirements, including procedures for preventing loss of gas to atmosphere.
Testing LPG fuel system must include:	• system leak testing • exhaust gas analysis to ensure compliance with relevant emission control standards.

Unit Mapping Information

Equivalent to AURTTL3009 Install LPG fuel systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL009 Install LPG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- install one complete liquefied petroleum gas (LPG) fuel system in a vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing LPG fuel systems, including procedures for working with extremely cold and flammable gas
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- requirements of AS/NZS 1425 LP Gas fuel systems for vehicle engines, including:
  - containers and container sub-assemblies
  - fuel service lines
  - fuel control equipment
- Australian standard inspection, testing and commissioning requirements
- LPG system adjustment procedures, including exhaust gas analysis
- Australian standard certification, compliance plate, and marking and label requirements.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the LPG fuel systems that they have installed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- AS/NZS 1425 LP Gas fuel systems for vehicle engines
- manufacturer vehicle LPG system specifications
- one vehicle requiring installation of an LPG fuel system
- LPG installation kit, including the following components:
  - fill valve and fill hose
  - fuel container and mounting
  - service line
  - vaporiser
  - regulator
  - safety lock-off devices
  - mixers or injectors
  - associated electrical and electronic system, including selector and safety switches
  - compliance plates
- testing equipment for LPG fuel systems, including exhaust gas analyser
- tools, equipment and materials for installing LPG fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL010 Install LPG, CNG and LNG electrical control equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install liquefied petroleum gas (LPG), compressed natural gas (CNG) and liquefied natural gas (LNG) electrical control equipment. It involves identifying and confirming work requirements, preparing for the work, installing LPG, CNG or LNG electrical control equipment, testing the installed equipment, and completing work finalisation processes, including clean-up and documentation.

It applies to those working in the automotive service and repair industry. The gas fuel system electrical control equipment includes that of agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Alternative Fuels

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install electrical control equipment	1.1 Job requirements are determined from workplace instructions 1.2 Electrical control equipment installation information is sourced and interpreted 1.3 Installation options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked for serviceability
2. Install electrical control equipment	2.1 Electrical control equipment is checked for correct application and components are checked for damage 2.2 Electrical control equipment components are installed according to workplace procedures, manufacturer specifications, ***safety and environmental requirements*** and relevant ***Australian standards***, and without causing damage to components or systems 2.3 Installed electrical control equipment is tested for correct operation and required adjustments are made according to manufacturer specifications, workplace procedures, safety requirements, and relevant Australian standards
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and system is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently • apply learning to new situations and installations.
Reading skills to:	• interpret Australian standards relating to electrical control equipment installation • interpret manufacturer procedures and specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording parts and material used.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to measure components and vehicle when calculating installation positions and material lengths • interpret gauges of testing equipment.
Digital literacy skills to:	• navigate computer programs in testing equipment and scan tools while testing and adjusting electrical control equipment.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• determine most appropriate method of installing electrical control equipment while meeting relevant Australian standards.
Technology skills to:	• use specialist tooling, measuring equipment and computerised equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS), occupational health and safety (OHS) requirements, including procedures for:
	  • working with extremely cold and flammable gas
	  • avoiding ignition of flammable gas when working on electrical systems
	• environmental requirements, including procedures for preventing loss of gas to atmosphere.

Australian standards must	• AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines

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include:	• AS/NZS 1425 LP Gas fuel systems for vehicle engines.

Unit Mapping Information

Equivalent to AURTTL3010 Install LPG, CNG and LNG electrical control equipment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL010 Install LPG, CNG and LNG electrical control equipment

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- install one piece of liquefied petroleum gas (LPG), compressed natural gas (CNG) or liquefied natural gas (LNG) electrical control equipment in a vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing LPG, CNG and LNG electrical control equipment, including procedures for:
  - working with extremely cold and flammable gas
  - avoiding ignition of flammable gas when working on electrical systems
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- requirements of Australian standards relating to installing LPG, CNG and LNG electrical control equipment:
  - AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
  - AS/NZS 1425 LP Gas fuel systems for vehicle engines
- properties of LP, CN and LN gases
- operating principles of LPG, CNG and LNG electrical control equipment
- post-installation testing procedures for LPG, CNG and LNG electrical control equipment, including fuel trim and exhaust gas analysis.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the LPG, CNG and LNG electrical control equipment they have installed in vehicles, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
- AS/NZS 1425 LP Gas fuel systems for vehicle engine
- manufacturer specifications for vehicle LPG, CNG or LNG systems
- one piece of LPG, CNG or LNG electrical control equipment requiring installation
- testing equipment for LPG, CNG or LNG electrical control equipment
- tools, equipment and materials for installing LPG, CNG or LNG electrical control equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL014 Analyse and evaluate faults in gas fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to analyse and evaluate faults in gas fuel systems in order to initiate action to sustain, vary or enhance performance. It involves identifying, evaluating, selecting, justifying and documenting the most appropriate rectification method or variation to the rectification method. The unit includes the analysis of multi-system and intermittent faults which may be caused by operating in adverse conditions.

It applies to those working in the automotive service and repair industry. The gas fuel systems include those of agricultural machinery, heavy commercial vehicles, forklifts, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements apply to this unit. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Alternative Fuels

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the work requirement	1.1 Objective of the analysis and evaluation is determined from workplace instructions 1.2 Specifications for gas fuel system are sourced and interpreted 1.3 System faults, deficiencies or discrepancies are identified and confirmed 1.4 Hazards associated with the work are identified and risks are managed according to workplace procedures, and ***safety and environmental requirements***
2. Prepare for analysis and evaluation	2.1 Evaluation criteria are developed or adopted to meet the objective of the analysis and evaluation 2.2 ***Analytical and evaluative methodology*** is developed or identified from technical information 2.3 Testing equipment is prepared according to manufacturer specifications and workplace procedures 2.4 Tools and materials required to support the diagnostic procedure are identified, selected and prepared for use 2.5 Gas fuel system and components are prepared for the diagnostic process
3. Carry out failure analysis	3.1 Selected analytical and evaluative methodology is followed according to manufacturer specifications and workplace procedures 3.2 Tests are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Analytical and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.4 Analytical findings and results are assessed against evaluation criteria 3.5 Valid conclusions are drawn from available evidence and documented according to workplace requirements
4. Make recommendations	4.1 Options for responding to the objective are determined from further research of technical support information 4.2 Rectification method is selected from an analysis of the options, operating conditions, regulatory requirements, Australian Design Rules, and financial implications 4.3 Report is prepared specifying analysis and evaluation process, and detailing and justifying rectification method or variation to

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	the rectification method
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• apply learning and processes to different situations.
Reading skills to:	• research, organise and interpret technical information relating to gas fuel systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting failure analysis findings • document and complete reports.
Numeracy skills to:	• use mathematical ideas and techniques to complete measurements, calculate analytical requirements, calibrate testing equipment and present analytical results.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialised gas fuel system diagnostic equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with extremely cold and flammable gas • environmental requirements, including procedures for preventing loss of gas to atmosphere.
Analytical and evaluative methodology must include:	• diagnostic process, sequence, tests and testing equipment.

Unit Mapping Information

Equivalent to AURTTL5014 Analyse and evaluate gas fuel system faults

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL014 Analyse and evaluate faults in gas fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- analyse and evaluate a fault in:
  - a gas fuel system
  - the electrical control of a different gas fuel system
  - the electronic control of a third gas fuel system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to analysing and evaluating faults in gas fuel systems, including procedures for working with extremely cold and flammable gas
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- principles and processes involved in planning and implementing analysis and evaluation of gas fuel system faults
- design and planning of diagnostic procedures of gas fuel system faults, including procedures for diagnosing:
  - fuel faults
  - mechanical faults
  - electrical faults
- procedures for analysing and evaluating gas fuel system faults, including:
  - system failure analysis
  - component failure analysis

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- types, functions, operation and limitations of gas fuel systems, including:
  - compressed natural gas (CNG)
  - liquefied natural gas (LNG)
  - liquefied petroleum gas (LPG)
- impact of other associated vehicle systems on gas fuel system operation, including:
  - ignition system and components
  - engine and components
  - cooling system and components
  - intake system and components
  - exhaust system and components
- testing procedures for gas fuel systems, including:
  - gas system performance under load
  - safety cut-out operation
  - convertor operation
  - mixer or injector operation
- types, functions, operation and limitations of diagnostic testing equipment required to analyse and evaluate faults in gas fuel systems
- procedures for documenting and reporting the analysis and evaluation process
- requirements of Australian Design Rules (ADRs) and Australian standards relating to gas fuel systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the gas fuel systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- manufacturer gas fuel system specifications
- three different gas fuel systems with faults
- diagnostic equipment for gas fuel systems
- tools, equipment and materials appropriate for analysing and evaluating gas fuel systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTL015 Develop and apply gas fuel system modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to develop, apply and validate significant modifications to existing gas fuel systems in order to vary or enhance performance. It involves identifying the modification requirement, developing the modification specifications, applying and testing the modification, and completing workplace processes and documentation.

Significant and non-routine modifications are those that require compliance with Australian Design Rules and Vehicle Safety Bulletins.

It applies to those working in the automotive service and repair industry. The gas fuel systems include those of agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Alternative Fuels

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Identify and confirm the modification requirement	1.1 Job requirements are determined from workplace instructions 1.2 Reasons for the modification are identified and confirmed with appropriate persons 1.3 Modification options are identified and presented to appropriate persons according to workplace procedures 1.4 Hazards associated with the work are identified and risks are managed 1.5 Legal and safety impacts of the modification are considered, as required, according to regulatory requirements
2. Develop and validate the modification specification	2.1 Manufacturer benchmark specifications for the existing gas fuel system are sourced and interpreted 2.2 Criteria for selecting the modification method and evaluating the outcomes are identified and documented 2.3 Proposed modification method is identified, selected and evaluated from available options 2.4 Selected option, including material choices and processes, is developed in detail and progressively assessed against established criteria 2.5 Modification specification is documented according to workplace procedures
3. Apply and test the modification specification	3.1 Tools, test equipment and materials required to support the modification procedure are identified, selected and prepared for use 3.2 Selected modification method is carried out according to workplace procedures, and ***safety and environmental requirements*** 3.3 Post-modification testing is carried out according to workplace procedures to confirm modification outcomes are as intended, and any problems detected as having been introduced during the modification process are rectified 3.4 Test results and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.5 Variations needed during the modification process or as a result of testing are incorporated into the modification specification 3.6 Information and detail relating to the modification are documented and provided to the appropriate parties according to regulatory and commercial obligations

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate and evaluate appropriate sources of information.
Reading skills to:	• interpret the operating and testing procedures for gas fuel system testing equipment from workplace and manufacturer literature • research, organise and interpret technical information from manufacturer and workshop literature when seeking gas fuel system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting modification findings and recording parts and material used.
Oral communication skills to:	• clarify instructions, gain information from supervisors, and report modification outcomes.
Numeracy skills to:	• measure gas fuel system components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications • interpret precision measuring equipment and test equipment units and scales.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

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Skills	Description
Technology skills to:	• use precision measuring equipment, such as micrometers and vernier calipers • use specialised testing equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with extremely cold and flammable gas • environmental requirements, including procedures for preventing loss of gas to atmosphere.

Unit Mapping Information

Equivalent to AURTTL5015 Develop and apply gas fuel system modifications

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTL015 Develop and apply gas fuel system modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- develop and apply the following significant and non-routine modifications on the gas fuel systems of two different vehicles or machinery:
  - adapt or modify gas fuel system to a significantly changed capability
  - adapt gas fuel system for different work conditions
  - modify or install a significant gas fuel system for a special purpose.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to developing and applying gas fuel system modifications, including procedures for working with extremely cold and flammable gas
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- principles and processes involved in planning and implementing modifications to gas fuel systems
- types, functions, operation and limitations of gas fuel systems being modified, including:
  - liquefied petroleum gas (LPG)
  - compressed natural gas (CNG)
  - liquefied natural gas (LNG)
- types, functions, operation and limitations of diagnostic testing equipment required for gas fuel system modifications
- associated vehicle systems and their impact on gas fuel system operation

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- requirements of Australian Design Rules (ADRs) and Vehicle Safety Bulletins (VSBs) relating to gas fuel system modifications
- procedures for documenting and reporting the modification specifications and outcomes.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the gas fuel systems that they have modified, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer gas fuel system specifications
- ADRs and Vehicle Safety Bulletins (VSBs) relating to gas fuel system modifications
- two different vehicles or machinery requiring gas fuel system modification n
- tools, equipment and materials appropriate for carrying out gas fuel system modifications.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTM001 Operate and monitor computer numerical control machines

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to operate and monitor computer numerical control (CNC) machines during machining operations of engine components as part of an engine reconditioning process. It involves preparing for the task, operating a CNC machine, selecting the appropriate program, performing machining to specifications and workplace requirements, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The engine components include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Manufacture

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to operate and monitor a CNC machine	1.1 Job requirements are determined from workplace instructions 1.2 Information is sourced, procedures and methods are analysed, and appropriate options are selected for operating and monitoring CNC machine 1.3 Pre-start checks are undertaken according to manufacturer procedures 1.4 Hazards associated with the work are identified and risks are managed
2. Operate a CNC machine	2.1 Computer program is ***selected and verified*** according to workplace instructions 2.2 CNC machine is operated to product specifications according to workplace procedures and ***safety and environmental requirements***, and following machinery safe operating procedures 2.3 Machine malfunctions are identified and reported according to workplace procedures 2.4 Machined component is checked to ensure compliance with specifications
3. Perform necessary adjustments during machining process	3.1 Tool wear is monitored and, where appropriate, pre-set tools are replaced, tool offsets are identified in computer-controlled program and adjusted, or other corrective action is taken according to manufacturer specifications and workplace procedures 3.2 Engine component deviation from specification is reported according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure finished work complies with workplace requirements and CNC machine is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 CNC machine and equipment are cleaned for use or storage according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret engine component specifications from workshop literature • interpret CNC machinery safe operating procedures from operating manuals and signs.
Writing skills to:	• legibly and accurately fill out workplace documentation to record measurements.
Oral communication skills to:	• clarify instructions • gain information when setting up machine operation.

Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop literature, and machinery dials, gauges and computer readouts
	• use basic mathematical operations, including addition and subtraction, to:
	  • convert metric dimensions to imperial, and imperial dimensions to metric
	  • calculate tolerances and clearances
	• interpret metric and imperial increments on precision measuring equipment.

Digital literacy skills to:	• navigate computer software, selecting and confirming options.
Problem solving skills to:	• determine the most appropriate method of component adjustment or machining for the situation.
Technology skills to:	• use metric and imperial precision measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Selecting and verifying must include:	• correct speed and feed rates of tools for cast iron and aluminium.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including operational risk assessment and treatments associated with:
	  • selecting and using personal protective equipment (PPE) when working with CNC machines and using chemical cleaning and lubricating agents
	  • safe operating procedures for operating CNC machinery
	• environmental requirements, including procedures for trapping, storing and disposing of cooling and lubricating fluids released during machining process.

Unit Mapping Information

Equivalent to AURTTM3001 Operate and monitor computer controlled machines

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTM001 Operate and monitor computer numerical control machines

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- conduct computer numerical control (CNC) machining of a shape in aluminium alloy, in which the work must involve:
  - drilling and tapping four holes
  - machining a pocket in the shape
  - surface machining one face on the shape
- conduct CNC machining of a shape in cast iron, in which the work must involve:
  - drilling and tapping four holes
  - machining a pocket in the shape
  - surface machining one face on the shape.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to operating and monitoring CNC machines, including operational risk assessment and treatments associated with:
  - selecting and using personal protective equipment (PPE) when working with CNC machines and using chemical cleaning and lubricating agents
  - safe operating procedures for operating CNC machinery
- environmental requirements, including procedures for trapping, storing and disposing of cooling and lubricating fluids released during machining process
- procedures for accessing computer-controlled programs installed in the machine controller, including:

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  - posting appropriate program to the machine
  - selecting tool specified by the program and for the material to be machined
  - selecting appropriate speeds and feeds
- computer-controlled machine operating procedures, including:
  - zeroing the machine axes
  - engaging warm-up procedures, and checking lubricant levels, coolant levels, and machine slide ways
  - mounting tools in tool holders
  - setting tool speed and feed rates
  - setting tool height manually
  - setting machine offset parameters to correct tool number and height
  - setting work piece datum
  - recording data in machine offsets
  - selecting dry run mode on CNC controller and single block to test program
- procedures for basic editing of computer program to reflect specific job requirements
- typical machine malfunctions, including:
  - programming
  - non-optimal speeds and feeds
  - inflexible controller
- tool wear and effect of wear on product or part specifications
- procedures to be followed once tool wear has been detected
- pre-set tool replacement procedures
- adjustment procedures for tool offsets
- effects of adjustments on machining specifications.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the CNC machines that they have operated and monitored, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine component specifications
- CNC machines appropriate for machining automotive engine components
- precision measuring equipment relevant to the component and work process
- cast iron and aluminium alloy shapes suitable for the CNC work specified in the performance evidence.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTM002 Repair bearing tunnels and connecting rods in engines

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to repair bearing tunnels and connecting rods in engines. It involves preparing for the task, line boring and honing engine bearing tunnels, repairing connecting rods to specifications and workplace requirements in an engine reconditioning process, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The engine components include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Manufacture

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Determine line boring requirements	1.1 Job requirements are determined from workplace instructions 1.2 Engine block is cleaned and main bearing bolt holes are crack tested according to workplace procedures and safety requirements 1.3 Information is sourced and repair options are analysed and those most appropriate to the circumstances are selected 1.4 Required tools and measuring equipment are checked and prepared for operation according to manufacturer specifications and workplace procedures 1.5 Hazards associated with the work are identified and risks are managed
2. Prepare engine and line boring machine	2.1 Engine is measured and ***calibration requirements*** for line boring are determined 2.2 ***Engine block or cylinder head is prepared*** for line boring according to workplace procedures and ***safety and environmental requirements*** 2.3 ***Line boring machine is prepared*** to accept cylinder engine block or cylinder head according to manufacturer specifications and workplace procedures 2.4 Engine block or cylinder head is ***positioned and clamped*** according to manufacturer specifications and workplace procedures
3. Line bore engine bearing tunnels	3.1 ***Tool is set and locked*** and a test cut is taken according to workplace procedures and safety requirements, and following machinery safe operating procedures 3.2 Engine tunnels are ***line bored at correct speeds and feed rates*** according to workplace procedures and safety requirements, and following machinery safe operating procedures 3.3 Line boring tool sharpness is checked and maintained throughout boring operation according to manufacturer specifications and workplace procedures 3.4 Engine block thrust faces and seal diameter are machined to original size 3.5 Tunnels are measured to ensure compliance with manufacturer specifications 3.6 Line boring operations are completed according to required ***specifications and honing allowances***, workplace procedures and safety requirements, and following machinery safe operating procedures
4. Prepare to hone	4.1 Line-bored engine block or cylinder head is cleaned of residue and

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
engine bearing tunnels	swarf according to workplace procedures and safety requirements 4.2 Tools and equipment for honing are selected and checked for serviceability 4.3 Measuring and calibration requirements for honing are determined 4.4 Honing machine is prepared to accept engine block or cylinder head according to manufacturer specifications and workplace procedures 4.5 Engine block or cylinder head is positioned and securely clamped, and required hone stroke is set according to manufacturer specifications and workplace procedures 4.6 Hone stones are selected and speed is set to achieve required finish
5. Hone engine bearing tunnels	5.1 Tunnels are honed at correct speed and rate to required finish according to workplace procedures and safety requirements, and following machinery safe operating procedures 5.2 Components are measured to ensure compliance with manufacturer specifications 5.3 Honing operations are completed to required tunnel to journal clearance according to workplace procedures and safety requirements, and following machinery safe operating procedures
6. Prepare to repair connecting rods	6.1 Connecting rods are ***cleaned and checked for serviceability*** according to workplace procedures and safety requirements 6.2 Connecting rods are checked for straightness and straightened as required according to workplace procedures and safety requirements, and following machinery safe operating procedures 6.3 Connecting rod boring machine is prepared to accept connecting rod 6.4 Connecting rod is positioned ready for honing, and securely clamped if machining
7. Repair connecting rod	7.1 Connecting rod little ends and big ends are resized according to workplace procedures and safety requirements, and following machinery safe operating procedures 7.2 Components are measured to ensure compliance with manufacturer specifications
8. Complete repair process	8.1 Engine block or cylinder head is thoroughly cleaned of residual honing oil according to workplace procedures 8.2 Final inspection is made to ensure finished work complies with workplace requirements 8.3 Bright surfaces are treated with rust prevention solution and engine

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	block or cylinder head is prepared for further process or storage according to workplace procedures 8.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret engine component specifications from manufacturer and workshop literature • interpret machinery safe operating procedures from operating manuals and signs.
Writing skills to:	• legibly and accurately fill out workplace documentation to record measurements.

Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop literature, and machinery dials and gauges
	• use basic mathematical operations, including addition and subtraction, to:
	  • convert metric dimensions to imperial, and imperial dimensions to metric
	  • calculate tolerances and clearances
	• interpret numerical measurements on metric and precision measuring equipment.

Planning and organising skills to:	• select best tooling option for the work and sequence procedure to reduce time and material wastage.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Calibration requirements must include:	• determining depths of cuts and required honing allowances • determining tunnel to journal clearance.
Preparing engine block or cylinder head must include:	• removing main bearing caps from engine block • machining bearing cap and engine block parting faces • fitting bearing caps to required tensions.

Safety and environmental requirements must include:	• work health and safety (WHS), and occupational health and safety (OHS) requirements, including:
	  • procedures for:
	  • selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear
	  • using hand tools and lifting equipment
	  • operational risk assessment and treatments associated with:
	  • electrical safety of line boring and honing machinery
	  • line boring and honing machinery movement and operation
	• environmental requirements, including procedures for trapping, storing and disposing of cooling and lubricating fluids released during machining process.

Preparing line boring machine must include:	• sharpening and shaping cutting tools • identifying worn and damaged cutting tools • mounting and positioning cutting tools • correctly using clamps, jigs and rails.
Positioning and clamping must include:	• setting work piece into line boring machine and aligning work piece to centre line of boring bar • using appropriate and sufficient clamping of work piece.
Setting and locking tool must include:	• setting tool to required diameter • locking tool according to manufacturer specifications.
Line boring at correct speeds and feed rates must include:	• using coolant and lubricant correctly • setting machining parameters to achieve job requirements and maximise tool life • setting speed and feed rates for tunnel material and diameter.
Specifications and honing	• consideration of speed and feed and nose radius of boring tool.

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allowances must include:	
Cleaning and checking for serviceability must include:	• crack testing connecting rod • measuring little end and big end size • checking big end fitment in connecting rod.

Unit Mapping Information

Equivalent to AURTTM3002 Repair bearing tunnels and connecting rods in engines

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTM002 Repair bearing tunnels and connecting rods in engines

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- set up the following multi-cylinder engine configurations on a line boring machine:
  - a V configured engine
  - an in-line configured engine
- line bore the main bearing tunnels of a cylinder block, including each of the following:
  - relocating a main bearing cap
  - fitting a semi-finished main bearing cap
  - sleeving a main bearing tunnel
- repair camshaft bearing tunnels of an overhead camshaft cylinder head
- repair full set of connecting rods
- repair one connecting rod with a stepped parting face.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS), and occupational health and safety (OHS) requirements relating to repairing bearing tunnels and connecting rods in engines, including:
  - procedures for:
    - selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear
    - using hand tools and lifting equipment
  - operational risk assessment and treatments associated with:
    - electrical safety of line boring and honing machinery

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    - line boring and honing machinery movement and operation
- environmental requirements, including procedures for trapping, storing and disposing of cooling and lubricating fluids released during machining process
- types, characteristics and limitations of line boring and honing machines, including:
    - types and grades of boring tools
    - types and grades of honing stones
- tool sharpening and dressing methods, including:
    - maintaining sharpness of tools throughout boring operations
    - dressing procedures for stones
- line boring methods and procedures, including:
    - preparing line borer to accept engine block or cylinder head
    - setting engine block or cylinder head into line boring machine and aligning to centre line of boring bar
    - setting line boring tool to correct diameter and locking boring tool
    - welding and relocating main bearing caps
    - machining top and bottom of bearing caps
    - machining parting faces of cylinder head camshaft bearing
    - line boring cylinder head camshaft tunnels
    - line boring damaged tunnels to oversize to accept sleeving operation
    - machining parting faces of cylinder block
    - line boring cylinder block tunnels to accept oversized back bearings
    - line boring tunnels to leave a honing allowance
    - line boring rear main bearing areas and thrust bearing diameters to original size
    - machining and squaring thrust faces in engine blocks
    - line boring semi-finished camshaft bearings
- line honing methods and procedures, including:
    - procedures for setting diameter of honing stone
    - rotational and oscillating speeds of honing bar
- connecting rod repair methods and procedures, including:
    - removing rod eye bush and measuring rod eye bore
    - checking alignment of connecting rod and straightening connecting rod
    - boring rod eye for oversized bush
    - removing cap bolts and nuts and machining parting faces on connecting rod and big end cap, including cracked rods
    - resizing big end for standard and oversize back bearings
    - fitting new little end bushes and pin boring little ends
    - types and application of cleaning and lubricating agents
- requirements of Australian standards relevant to engine reconditioning, including:
    - AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines

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  - AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- post-repair operations, including rust protection of machined surfaces.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the bearing tunnels and connecting rods in engines that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
- AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- multi-cylinder engine blocks and cylinder heads specified in the performance evidence
- engine line boring and honing machines
- precision measuring equipment, including:
  - dial bore gauges
  - dial indicators
  - inside and outside metric and imperial micrometers.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTM003 Apply metal to rebuild engine components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to apply metal spray and hard chrome and weld materials, and perform the necessary machining to rebuild engine components. It involves preparing for the task, determining repair requirements, rebuilding engine components, bearing tunnels and connecting rods in engines, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The engine components include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Manufacture

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to undertake metal building procedures	1.1 Job requirements are determined from workplace instructions 1.2 Information is sourced, procedures and methods are analysed, and appropriate tools are selected for rebuilding engine components 1.3 Tools and ***measuring equipment*** are selected and checked for serviceability 1.4 Hazards associated with the work are identified and risks are managed 1.5 Engine component is prepared for appropriate metal application method according to workplace procedures and ***safety and environmental requirements***
2. Apply metal to engine component	2.1 Metal application process is used to rebuild damaged engine component according to workplace procedures and safety requirements, and following machinery safe operating procedures 2.2 Engine component is measured to ensure compliance with specifications 2.3 Metal application process is completed in readiness for further repair according to workplace procedures and safety requirements, and following machinery safe operating procedures
3. Perform necessary machining to rebuild component	3.1 Machining is carried out according to workplace procedures and safety and environmental requirements, and following machinery safe operating procedures 3.2 Component is measured to ensure compliance with manufacturer specifications 3.3 Machining operations are completed according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and following machinery safe operating procedures
4. Complete rebuild processes	4.1 Component surfaces are finished to manufacturer specifications and within allowable tolerances according to workplace procedures and safety and environmental requirements, and following machinery safe operating procedures 4.2 Final inspection is made to ensure finished work complies with workplace requirements 4.3 Bright surfaces are treated with rust prevention solution and engine component is prepared for further process or storage according to workplace procedures 4.4 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	4.5 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• identify and interpret engine component specifications from workshop literature • interpret safe operating procedures for engine component rebuild machinery from operating manuals and signs.
Writing skills to:	• legibly and accurately fill out workplace documentation to record measurements.

Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop literature, and machinery dials, gauges and computer readouts
	• use basic mathematical operations, including addition and subtraction, to:
	  • convert metric dimensions to imperial, and imperial dimensions to metric
	  • calculate tolerances and clearances
	• use metric and imperial precision measuring equipment.

Planning and organising skills to:	• select best rebuild option for the work and sequence procedure to reduce time and material wastage.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Measuring equipment must include:	• dial indicators • inside and outside metric and imperial micrometers.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures:
	  • selecting and using personal protective equipment (PPE)
	  • safely operating welding, metal spraying and hard chroming machinery
	• environmental requirements, including procedures for trapping, storing and disposing of cooling and lubricating fluids released during the machining process.

Unit Mapping Information

Equivalent to AURTTM3003 Apply metal to rebuild engine components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTM003 Apply metal to rebuild engine components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- repair a cast iron cylinder head
- repair a crack in an aluminium alloy cylinder head
- build up camshaft lobes or journals by welding, metal spraying and hard chroming, and machine to specifications
- build up crankshaft journals or thrust surfaces or bearing faces by welding, metal spraying and hard chroming, and machine to specifications.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to applying metal to rebuild engine components, including procedures for :
  - selecting and using personal protective equipment (PPE)
  - safely operating welding, metal spraying and hard chroming machinery
- environmental requirements, including procedures for trapping, storing and disposing of cooling and lubricating fluids released during the machining process
- procedures for identifying existing heat treatment processes, including nitriding, Tufftriding and induction hardening
- specific welding procedures, including:
  - manual metal arc welding (MMAW)
  - gas metal arc welding (GMAW)
  - gas tungsten arc welding (GTAW)
  - flux core

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  - metal spraying
  - submerged arc
- procedures for hard chrome application
- repair operations for components, including:
  - crankshaft journals
  - camshaft journals and lobes
  - seal areas
  - crankshaft nose and keyway
  - pulley retaining thread damage
- crankshaft radius treatment, including:
  - shot peening
  - radius rolling
  - deep fillet radius rolling
- requirements of Australian standards relevant to engine reconditioning, including:
  - AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
  - AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- post-repair operations, including rust protection of machined surfaces.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine components that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions

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- manufacturer engine specifications
- multi-cylinder crankshafts, camshafts, and engine cylinder heads specified in the performance evidence
- hand, air and power tools, welding equipment and materials for rebuilding engine components
- precision measuring equipment, including:
  - dial indicators
  - inside and outside metric and imperial micrometers.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTM004 Assemble engine blocks and sub-assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to assemble a short engine block and sub-assemblies, and check clearances and tolerances in an engine reconditioning process. It involves preparing for the task, selecting the correct assembly procedure, carrying out the assembly and performing post-assembly testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The engine blocks and sub-assemblies include those in vehicles from all sectors of the industry. This unit does not cover fitting semi-finished sleeves, or boring and honing cylinders.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Manufacture

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to assemble engine block and sub-assembly	1.1 Job requirements are determined from workplace instructions 1.2 Information is sourced, procedures and methods are analysed, and appropriate tools are selected for assembling engine block and sub-assemblies 1.3 ***Tools*** and measuring equipment are prepared and checked for serviceability 1.4 Hazards associated with the work are identified and risks are managed 1.5 ***Pre-assembly cleaning*** of engine components is carried out according to ***safety and environmental requirements***, and components are laid out in logical order 1.6 Replacement component parts are checked for size and suitability according to manufacturer specifications and job requirements
2. Check engine block and sub-assembly clearances and tolerances	2.1 ***Clearances and tolerances are measured*** to the tolerance required by manufacturer specifications 2.2 ***Clearances and tolerances are adjusted*** according to workplace procedures and to the tolerance required by manufacturer specifications
3. Assemble engine block and engine sub-assembly	3.1 Engine sub-assemblies are ***assembled*** in correct order and without damage, against manufacturer specifications and tolerances and according to workplace procedures and relevant Australian standards and safety requirements 3.2 Engine blocks are assembled in correct order against manufacturer specifications and tolerances and according to workplace procedures, relevant ***Australian standards***, and safety requirements, and without causing damage to components or systems 3.3 Assembled components are measured according to manufacturer specifications and workplace procedures 3.4 Assembled component clearances and tolerances are adjusted according to workplace procedures and to the tolerance required by manufacturer specifications
4. Complete assembly process	4.1 Final inspection is made to ensure finished work complies with workplace requirements 4.2 Bright surfaces are treated with rust prevention solution and engine block and sub-assemblies are prepared for further process or storage according to workplace procedures

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	4.3 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• identify and interpret engine component specifications from workshop literature • interpret machinery safe operating procedures from operating manuals and signs.
Writing skills to:	• legibly and accurately fill out workplace documentation when making recommendations and recording parts and material used.

Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop literature, and machinery dials, gauges and computer readouts
	• use basic mathematical operations, including addition and subtraction, to:
	  • convert metric dimensions to imperial, and imperial dimensions to metric
	  • calculate tolerances and clearances.

Planning and organising skills to:	• determine best tooling option for the work and sequence procedure to reduce time and material wastage.
Technology skills to:	• use metric and imperial precision measuring equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools must include:	• fixed and portable hand, air and power tools • lifting equipment • torque wrench • material suitable for assembling engine block.
Pre-assembly cleaning must include:	• removing machining residue • ensuring gasket faces are clean, and oil and water passageways are clear using appropriate tools, such as a rifle brush.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including operational risk assessment and treatments associated with:
	  • power tool electrical safety
	  • manual and mechanical lifting and shifting equipment
	  • toxic cleaning substances
	• environmental requirements, including procedures for trapping, storing and disposing of cleaning fluids released during the assembly process.

Measuring clearances and tolerances must include:	• back clearance and side clearance • bearing to journal clearance • end floats • piston ring end gap • piston to bore clearance.
Adjusting clearances and tolerances must include:	• adjusting gear backlash • machining semi-finished thrust bearings • machining piston protrusion and valve pockets • pin-boring connecting rod little ends.
Assembled must include:	• gaskets • seals.
Australian standards must include:	• AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines • AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines.

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Unit Mapping Information

Equivalent to AURTTM3004 Assemble engine blocks and sub-assemblies

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTM004 Assemble engine blocks and sub-assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- assemble two different engine blocks, one of which must be a V configuration engine block, and the sub-assemblies of those engine blocks, in which the work must involve:
  - a multi-cylinder diesel engine
  - a multi-cylinder petrol engine.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to assembling engine blocks and sub-assemblies, including procedures for:
  - selecting and using personal protective equipment (PPE) for handling engine blocks and sub-assemblies and using chemical cleaning agents
  - correctly operating specialised equipment, including heating torches, ovens and presses
  - handling freezing substances, including liquid nitrogen
  - manual handling techniques, including:
    - using machinery for lifting engine blocks and engine components
    - using slings, chains and other lifting equipment according to safe work practices
- environmental requirements, including procedures for trapping, storing and disposing of cleaning fluids released during the assembly process
- procedures for clearance testing and adjusting or machining components, including:
  - piston to connecting rod big end alignment
  - big end and main bearing crush with bearing blue

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- piston ring end gap, back clearance and side clearance
- bearing to crankshaft clearances with plastigage and measuring and calculating clearances
- semi-flanged thrust bearings
- finished camshaft bearings and measuring clearances
- camshafts and cam followers
- camshaft end float
- crankshaft end float
- gear backlash
- oil pump sealing and pick-up oil piping

- component assembly procedures and processes, including:
  - pre-assembly wash procedures for components
  - welsh plugs and oil gallery plugs
  - piston and connecting rod assemblies
  - big end bearings
  - piston rings to pistons, including procedures for using ring compressors
  - main bearings and thrust washers
  - semi-flanged thrust bearings
  - crankshafts, including protection measures for crankshaft journals, bearings, rings and bores
  - finished camshaft bearings
  - camshafts and cam followers
  - timing gears
  - chains and tensioners
    - oil pumps, oil squirters and oil pump pick-ups
    - balance shafts
    - fitting ancillary components, including:
    - covers and seals
    - housings
    - diesel fuel injection pumps
    - oil coolers
    - crankshaft pulleys
    - flywheels
    - bell housings
- requirements of Australian standards relevant to engine reconditioning, including:
  - AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
  - AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine block and sub-assemblies that they have assembled, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- engine specifications
- AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
- AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- two different multi-cylinder engine blocks, including:
  - in-line engine blocks
  - V configuration engine blocks
- full gasket and seal set for the engine block
- fixed and portable hand, air and power tools, lifting equipment, torque wrench and material suitable for assembling engine block
- precision measuring equipment, including:
  - dial bore gauges
  - dial indicators
  - inside and outside metric and imperial micrometers.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTM005 Balance rotating and reciprocating engine components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to balance rotating and reciprocating engine components. It involves preparing for the task, determining and performing the balancing requirements for the engine component in an engine reconditioning process, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The engine components include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Manufacture

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to balance rotating and reciprocating engine component	1.1 Job requirements are determined from workplace instructions 1.2 Methods of balancing component are sourced and interpreted from manufacturer literature and workplace procedures 1.3 Tools and measuring equipment are selected and checked for serviceability 1.4 Hazards associated with the work are identified and risks are managed 1.5 Engine component is ***prepared*** for balancing operations and balancing machine is prepared to accept component according to ***safety requirements***
2. Balance rotating and reciprocating engine component	2.1 Component is mounted and engaged with machine according to workplace procedures and safety requirements, and following machinery safe operating procedures 2.2 Rotating and reciprocating engine components are balanced in line with workplace requirements and according to workplace procedures, safety requirements, and machinery safe operating procedures, and without causing damage to components or system
3. Complete balancing processes	3.1 Final inspection is made to ensure work is to workplace requirements 3.2 Component is cleaned and presented ready for use or stored according to workplace procedures 3.3 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Reading skills to:	• identify and interpret engine component specifications from workshop literature • interpret safe operating procedures for engine component balancing machinery from operating manuals.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording measurements.
Oral communication skills to:	• clarify instructions.

Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop manuals, and machinery dials and gauges
	• use basic mathematical operations, including addition, subtraction, division and multiplication to:
	  • convert metric dimensions to imperial, and imperial dimensions to metric
	  • weigh engine components to determine weight to be removed or added.

Digital literacy skills to:	• navigate and operate computerised balancing machinery.
Problem solving skills to:	• determine the most appropriate balancing method for the situation.
Technology skills to:	• use metric and imperial precision measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Preparing must include:	• procedures for chemically cleaning components without damage • checking all components to ensure no further machining is required.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including operational risk assessment and treatments associated with:
	  • electrical safety of balancing equipment and machinery
	  • equipment and machinery movement and operation.

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Unit Mapping Information

Equivalent to AURTTM3005 Balance rotating and reciprocating engine components

Links

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Assessment Requirements for AURTTM005 Balance rotating and reciprocating engine components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- balance one four or six cylinder in-line engine crankshaft assembly, including:
  - front pulley
  - crankshaft and flywheel and pressure plate (manual transmission) or drive plate (automatic transmission)
- balance one V8 engine crankshaft assembly, including:
  - front pulley
  - crankshaft and flywheel and pressure plate (manual transmission) or drive plate (automatic transmission)
- balance one piston and connecting rod assembly
- during the above work, perform each of the following methods of adding or removing weight from engine components:
  - drilling
  - welding
  - machining.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to balancing rotating and reciprocating engine components, including operational risk assessment and treatments associated with:
  - electrical safety of balancing equipment and machinery
  - equipment and machinery movement and operation

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- operating principles of component balancing, including:
  - dynamic balance
  - internally and externally balanced engines
  - reciprocating mass
  - rotating mass
  - sources of torsional vibration
  - gas pressure
  - purpose of counterweights, torsional vibration dampeners, and balance shafts in balancing
  - difference between in-line engine balance, flat plane and V type engine balance, including the effect of the number and angle of cylinders
- balancing procedures and techniques, including:
  - in-line engines, flat plane crankshafts and V type engines
  - protecting crank pins from damage from bob-weight clamping
  - protecting main bearing journals from damage from balancing machine cradle rollers or V block
  - weight matching the pistons and rod ends
  - methods of calculating bob-weight values for V type and in-line engines, including:
    - rotating mass with oil allowance
    - reciprocating mass
    - effect of number of cylinders and V angle on the total calculation
  - mounting bob-weights on crankshafts of V type engines
  - balancing internally balanced engines
  - balancing externally balanced engines
- procedures for adding and removing metal to the crankshaft, including:
  - drilling and linishing to remove weight
  - welding to add weight
  - machining or drilling and adding heavy metal.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the rotating and reciprocating engine components that they have balanced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- material relevant to balancing rotating and reciprocating engine components
- multi-cylinder crankshafts, flywheels and piston and connecting rod assemblies specified in the performance evidence and requiring balancing
- precision measuring equipment, including:
  - dial indicators
  - inside and outside metric and imperial micrometers
  - scales in 0.1 gram graduations
- linishing machine
- hand, air and power tools appropriate to balancing rotating and reciprocating engine components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTM006 Perform advanced machining and blueprinting of engine components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to compare engine components to original manufacturer and component supplier specifications and match them in relation to weight, size and capacity. It involves preparing for the task, measuring and machining components to original manufacturer and component supplier specifications, and completing workplace processes and procedures.

It applies to those working in the automotive service and repair industry. The engine components include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Manufacture

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to blueprint engine	1.1 Job requirements are determined from workplace instructions 1.2 Information is sourced, procedures and methods are analysed, and appropriate tools are selected for machining and blueprinting engines 1.3 Tools and measuring equipment are selected and checked for serviceability 1.4 Hazards associated with the work are identified and risks are managed 1.5 Cylinder block and cylinder head are ***prepared*** for blueprinting according to ***safety and environmental requirements***
2. Measure components	2.1 Measurements, clearances and tolerances are sourced and interpreted from manufacturer and component supplier literature 2.2 Components are measured and clearances and tolerances are calculated according to workplace procedures
3. Machine components	3.1 Components are adjusted or machined to meet manufacturer and component supplier specifications according to workplace procedures and safety and environmental requirements, and following machinery safe operating procedures 3.2 Dummy assembly of engine is performed as required and clearances and tolerances are calculated according to workplace procedures 3.3 Further machining is carried out as required to achieve required clearances and tolerances 3.4 Engine is assembled according to job requirements and clearances, and tolerances are calculated again 3.5 Bright surfaces are treated with rust prevention solution and component is prepared for further process or storage according to workplace procedures 3.6 ***Blueprinting schedule documentation*** is completed according to workplace procedures
4. Complete blueprinting and machining process	4.1 Final inspection is made to ensure finished work complies with workplace requirements 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret engine component specifications from workshop literature • interpret machinery safe operating procedures from operating manuals.
Writing skills to:	• legibly and accurately fill out workplace documentation when making recommendations and recording measurements and material used.

Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop literature, and machinery dials and gauges
	• use basic mathematical operations, including addition and subtraction, multiplication and division to:
	  • convert metric dimensions to imperial, and imperial dimensions to metric
	  • calculate tolerances and clearances.

Planning and organising skills to:	• select best tooling option for the work and sequence procedure to reduce time and material wastage.
Technology skills to:	• operate machinery when adjusting or machining engine components • use metric and imperial precision measuring equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Preparation must include:	• ensuring surfaces are clean and oil and water passageways are clear using appropriate tools, such as a rifle brush.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
	  • procedures for selecting and using personal protective equipment (PPE) for:
	  • handling engine blocks and sub-assemblies
	  • using chemical cleaning agents
	  • operational risk assessment and treatments associated with:
	  • electrical safety of machinery
	  • machinery movement and operation
	• environmental requirements, including procedures for trapping, storing and disposing of cleaning and lubricating fluids released during process.

Blueprinting schedule documentation must include:	• record of work performed, including tolerances and clearances achieved.

Unit Mapping Information

Equivalent to AURTTM3006 Perform advanced machining and blueprinting of engine components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTM006 Perform advanced machining and blueprinting of engine components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- machine and blueprint two of the following different engine components:
  - engine with multiple overhead camshafts
  - V configuration engine with at least six cylinders
  - multi-cylinder diesel engine.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to performing advanced machining and blueprinting of engine components, including:
  - procedures for selecting and using personal protective equipment (PPE) for:
    - handling engine blocks and sub-assemblies
    - using chemical cleaning agents
  - operational risk assessment and treatments associated with:
    - electrical safety of machinery
    - machinery movement and operation
- environmental requirements, including procedures for trapping, storing and disposing of cleaning and lubricating fluids released during process
- procedures for preparing cylinder blocks and cylinder heads for blueprinting, including:
  - chemically cleaning engine components, including methods for avoiding damage or loss of components
  - chasing threads to remove debris with correct grade tap

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  - hardness testing components
  - pressure testing cylinder heads
  - checking cylinder heads for bend on both sides
  - checking cylinder heads for minimum thickness
  - checking valve guides, valve stems, collets and valve springs for wear
  - testing engine block, including sonic testing and crack testing
  - dummy assembling engines, including reasons for dummy assembling engines
- procedures for blueprinting cylinder blocks, including:
  - line boring main tunnels to produce datum
  - fitting bearings and checking crush
  - measuring main bearing tunnel with bearings fitted
  - grinding crankshaft to suit bearings and to achieve desired clearance and phasing consistency
  - sleeving lifter bores to centre line of camshaft and checking lifter to bore clearance and alignment to camshaft
  - fitting camshaft bearings and checking running clearances
  - squaring up deck to crankshaft tunnel to ensure crankshaft is parallel to block
  - fitting torque plate to bore and hone
  - honing cylinders to desired surface finish, matching individual pistons to respective bores
  - setting ring end gap
  - achieving consistent piston height for desired compression ratio and checking rotational clearance
- procedures for blueprinting connecting rods, including:
  - shot peening connecting rods
  - preparing rod for re-sizing, including removing and locating dowels as required
  - selecting bolts
  - tensioning and re-sizing tunnel, maintaining centre-to-centre height
  - checking little end running clearance
  - removing bushes and checking parent bore of rod and bush fitment
  - pin fitting rod, maintaining centre-to-centre height and running clearance
  - checking alignment of rod
  - fitting up bearings, checking crush and running clearance
  - resizing connecting rods and fitting new bolts to ensure centre-to-centre length and alignment is correct
- procedures to blueprint cylinder heads, including:
  - methods for achieving optimum airflow, including limitations of cylinder head modifications
  - machining for larger valves, including identifying machining shifts in castings
  - operating flow bench
  - porting for improved air flow and to balance combustion chambers

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  - calculating capacity of individual combustion chambers and machining combustion chambers to achieve consistency
  - calculating compression ratio
  - selecting camshaft
  - setting valve heights
  - calculating installed height of valve springs and seat pressure
  - calculating valve spring open height and pressure
  - calculating valve spring solid height and coil bind clearance
  - calculating spring retainer to stem seal clearance
  - dialling camshaft
  - machining pistons to achieve desired compression ratio
  - setting rocker geometry, including length and sweep
- requirements of Australian standards relevant to engine reconditioning, including:
  - AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
  - AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- post-grinding operations, including rust protection of machined surfaces.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine components that they have machined and blueprinted, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications

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- AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
- AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- two different multi-cylinder engines as specified in the performance evidence requiring machining and blueprinting
- precision measuring equipment, including:
  - dial bore gauges
  - dial indicators
  - inside and outside metric and imperial micrometers
  - inside and outside spring calipers
  - fixed and portable hand, air and power tools
  - lifting equipment
- material suitable for machining and blueprinting the engine components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTM007 Carry out crankshaft grinding

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out grinding operations on engine crankshafts to specific under sizes. It involves preparing for the task, determining crankshaft damage and required repair action, preparing and using grinding machines to grind crankshafts to specifications, tolerances and workplace requirements, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The crankshafts include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Manufacture

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to grind crankshaft	1.1 Job requirements are determined from workplace instructions 1.2 ***Crankshaft is cleaned and inspected*** and condition reported 1.3 Information is sourced, procedures and methods are analysed, and appropriate crankshaft grinding machine and equipment are selected for the crankshaft 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and measuring equipment are selected and checked for serviceability 1.6 Crankshaft grinding wheel is ***prepared*** according to machine manufacturer specifications and tolerances, and workplace procedures 1.7 Crankshaft is measured to determine under size and tolerances, including journal diameters and sizes of grind 1.8 Crankshaft is positioned in grinder in correct direction of rotation, and clamped according to manufacturer specifications and workplace procedures
2. Grind crankshaft big end bearing journals	2.1 Chuck offsets are set according to the stroke of crankshaft 2.2 Crankshaft grinder wheel head position is set according to machine manufacturer procedures 2.3 Constant measuring gauge and steady rest are positioned on big end journal taking into account position of oil hole 2.4 Crankshaft is ground at correct rotational speed for crankshaft material and diameter according to ***safety requirements***, and following machinery safe operating procedures 2.5 Crankshaft is measured to ensure compliance with specifications and tolerances 2.6 Grinding operations are completed to required specifications and tolerances according to safety requirements, and following machinery safe operating procedures
3. Grind crankshaft main bearing journals	3.1 Crankshaft is removed from grinder 3.2 Chucks are centralised for main bearings and counterweights are adjusted 3.3 Crankshaft is refitted to grinder in correct direction of rotation, and is clamped according to manufacturer specifications and workplace procedures 3.4 Datum is set in relation to crankshaft rear flange and nose 3.5 Crankshaft grinder wheel head movement is set according to

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	manufacturer procedures 3.6 Constant measuring gauge and steady rest are positioned on main bearing journal taking into account position of oil hole 3.7 Crankshaft is ground at correct rotational speed for crankshaft material and diameter according to safety requirements, and following machinery safe operating procedures 3.8 Crankshaft is inspected to ensure compliance with specifications and tolerances 3.9 Grinding operations are completed to required specifications and tolerances according to safety requirements, and following machinery safe operating procedures
4. Finish crankshaft grinding	4.1 Oil holes are chamfered and dressed 4.2 Journals are linished with correct grade of belt and in right direction of rotation and required finish 4.3 Flange ends and seal areas are faced 4.4 ***Crankshaft is examined and measured*** according to manufacturer specifications and tolerances, and workplace procedures 4.5 Crankshaft is cleaned according to workplace procedures 4.6 Bright surfaces are treated with rust prevention solution and crankshaft is prepared for further process or storage according to workplace procedures
5. Complete work processes	5.1 Final inspection is made to ensure finished work complies with workplace requirements and crankshaft is presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret crankshaft specifications from workshop literature • interpret machinery safe operating procedures from operating manuals.
Writing skills to:	• legibly and accurately fill out workplace documentation to record measurements.

Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop literature, and machinery dials, gauges and computer readouts
	• use basic mathematical operations, including addition and subtraction, to:
	  • convert metric dimensions to imperial, and imperial dimensions to metric
	  • calculate tolerances and clearances.

Planning and organising skills to:	• select best tooling option for the work and sequence procedure to reduce time and material wastage.
Technology skills to:	• use metric and imperial precision measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Cleaning and inspecting crankshaft must include:	• following procedures for chemically cleaning nitride and Tufftride crankshafts
	• inspecting crankshaft, including:
	  • coil shot
	  • end shot
	  • hardness
	  • alignment
	  • bend
	  • thread condition
	  • key way condition
	  • seal running surfaces condition

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	• rear flange condition • nose gear condition.
Preparation must include:	• selecting wheel to suit radius and journal width • procedures for dressing wheel.
Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • selecting and using personal protective equipment (PPE) for using grinding machines and chemical cleaning and lubricating agents • identifying hazards associated with rotating grinding machines • manual handling techniques relating to grinding crankshafts.
Examining and measuring crankshaft must include:	• checking journals for: • acceptable surface finish • taper • ovality • barrelling • hourglass • grinding chatter and journal burning • checking crankshaft for straightness in V blocks using a dial indicator.

Unit Mapping Information

Equivalent to AURTTM3007 Carry out grinding operations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTM007 Carry out crankshaft grinding

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- grind one crankshaft of an in-line petrol engine with at least four cylinders.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to grinding crankshafts, including procedures for:
  - selecting and using personal protective equipment (PPE) for using grinding machines and chemical cleaning and lubricating agents
  - identifying hazards associated with rotating grinding machines
  - manual handling techniques relating to grinding crankshafts
- types, characteristics and limitations of crankshaft grinding machines, including:
  - hand-held machines for oil hole dressing
  - types and grades of grinding wheels, including grit grades
- dismantling procedures for crankshafts, including:
  - numbering and removing counterweights
  - drive gears
  - oil seal sleeves and dowels
- cleaning and inspection procedures, including:
  - chemically cleaning crankshafts, including methods of avoiding damage to nitride and Tufftride crankshafts
  - identifying crankshaft material

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    - identifying heat treatment process, including nitriding, Tufftriding and induction hardening
    - identifying radius treatment, including deep fillet rolling, radius rolling and shot peening
    - checking alignment of crankshaft in V blocks
    - measuring journals against specifications and identifying damaged journals
    - testing procedures for crankshaft, including:
        - crack testing coil shot and end shot
        - testing hardness of journals
- procedures for preparing crankshaft grinding wheel, including:
    - wheel preparation, including selecting wheel to suit radius and journal width of crankshaft
    - dressing procedures for wheel, including:
        - types of diamonds for front and radius dressing
        - procedures for dressing wheel to suit crankshaft radius
        - procedures for dressing front of wheel
- procedures for big end grinding, including:
    - setting crankshaft rotation speed according to crankshaft material and big end diameter
    - setting crankshaft grinder wheel head position
    - setting chuck offsets for big end bearings and adjusting counterweights to suit
    - fitting crankshaft in correct direction of rotation and ensuring that critical surfaces are not damaged by the chuck
    - measuring journal diameters during grinding with constant measuring gauge
- procedures for adjusting crankshaft grinder to suit main bearing journal grinding, including:
    - removing crankshaft from grinder
    - fitting crankshaft in correct direction of rotation
    - setting datum in relation to rear flange and nose for main bearing grinding
- procedures for main bearing journal grinding, including:
    - setting crankshaft rotation speed according to crankshaft material and journal size
    - setting crankshaft grinder wheel head position
    - measuring journal diameters during grinding with constant measuring gauge
- procedures for finishing journal grinding, including:
    - chamfering and dressing oil holes
    - linishing journals according to grade of belt, required finish, and rotational direction
    - setting up and facing flange ends and seal areas
    - final grinding inspections of crankshaft, including:
        - journal surface finish
        - taper, ovality, barrelling, and hourglass
        - grinding chatter
        - burning of radius and journals

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  - methods of correcting faults
- procedures for removing crankshaft from grinder and checking crankshaft for straightness in V blocks using dial indicator
- requirements of Australian standards relating to engine reconditioning, including:
  - AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
  - AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- post-grinding operations, including rust protection of machined surfaces.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the crankshaft grinding that they have carried out, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer crankshaft specifications
- AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
- AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- crankshaft from an in-line petrol engine with at least four cylinders requiring grinding
- engine crankshaft grinding machine
- precision measuring equipment, including:
  - dial indicators
  - inside and outside metric and imperial micrometers.

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Links

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AURTTM008 Dismantle and evaluate engine blocks and sub-assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to dismantle and evaluate an engine block and its sub-assemblies as part of an engine repair or reconditioning process. It involves preparing for the task, dismantling and evaluating the engine blocks and sub-assemblies, determining required repair action, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The engine blocks and sub-assemblies include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Manufacture

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle engine block and sub-assembly	1.1 Job requirements are determined from workplace instructions 1.2 Engine block and sub assembly dismantling information is sourced and interpreted 1.3 Tools and measuring equipment are selected and checked for serviceability 1.4 Hazards associated with the work are identified and risks are managed 1.5 Engine is set up for dismantling using appropriate lifting equipment and avoiding fluid spillage according to ***safety and environmental requirements*** 1.6 Engine block and sub-assembly are cleaned according to safety and environmental procedures and relevant Australian standards, and positions of auxiliary equipment are ***recorded, including*** photographic evidence
2. Dismantle engine block and sub-assembly	2.1 Covers and ancillary components are removed, cleaned and stored according to workshop procedures 2.2 Engine block and sub-assembly are dismantled according to safety requirements and laid out in a logical order using approved methods, tools and equipment 2.3 Component parts are cleaned using appropriate cleaning agents for the type of material and kept in a logical order in preparation for evaluation
3. Determine repair procedures	3.1 Engine block and sub-assembly are ***inspected, measured and tested*** against manufacturer specifications and tolerances and according to workplace procedures and safety requirements 3.2 Engine block and sub-assembly are evaluated and repair requirements are determined and reported according to workplace procedures
4. Complete dismantle and evaluation processes	4.1 Final inspection is made to ensure finished work complies with workplace requirements 4.2 Bright surfaces are treated with rust prevention solution and engine block and sub-assembly are prepared for further process or storage according to workplace procedures 4.3 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• identify and interpret engine component specifications from workshop literature • interpret safe operating procedures for engine component rebuild machinery from operating manuals and signs.
Writing skills to:	• legibly and accurately fill out workplace documentation when making recommendations.

Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop literature, and machinery dials, gauges and computer readouts
	• use basic mathematical operations, including addition and subtraction, to:
	  • convert metric dimensions to imperial, and imperial dimensions to metric
	  • calculate tolerances and clearances.

Planning and organising skills to:	• select best tooling option for the work and sequence components to reduce time and material wastage.
Technology skills to:	• use metric and imperial precision measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including operational risk assessment and treatments associated with:
	  • electrical equipment used in dismantling and evaluating engine blocks and sub-assemblies
	  • manual and mechanical lifting and shifting equipment

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	• toxic cleaning substances • environmental requirements, including procedures for trapping, storing and disposing of cleaning fluids released during the process.
Inspecting, measuring and testing must include:	• applying surface finishes and wear patterns to: • cylinder bores, crankshafts, pistons, gears, cam followers, and camshafts • bearings and bushes • block facings • parting faces of connecting rod • main bearing caps • crack testing: • connecting rods • crankshaft • camshaft • cylinder block surface • camshaft and main bearing tunnels • main bearing caps • hardness testing: • alloy cylinder blocks, pistons, crankshaft journals and camshaft followers • checking taper, ovality and wear of: • crankshaft and camshaft journals • main bearing and connecting rod tunnels • cylinder bores in conventional engine blocks and parent bores of engine blocks with dry sleeves • checking: • camshaft lobe lift • straightness of shafts • main bearing tunnels for alignment • connecting rod alignment and little end bore size • cylinder block flatness and deck height • piston ring land clearance, piston skirt wear, and gudgeon pin to piston clearance • cylinder liner register in both upper and lower parts of cylinder block • oil pump for serviceability • idler gear hub to bearing clearance.

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Unit Mapping Information

Equivalent to AURTTM3008 Dismantle and evaluate engine blocks and sub-assemblies

Links

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Assessment Requirements for AURTTM008 Dismantle and evaluate engine blocks and sub-assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- dismantle and evaluate the following three different engine blocks and their sub-assemblies:
  - in-line engine block
  - V configuration engine block
  - diesel engine block with sleeves.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to dismantling and evaluating engine blocks and sub-assemblies, including operational risk assessment and treatments associated with:
  - electrical equipment used in dismantling and evaluating engine blocks and sub-assemblies
  - manual and mechanical lifting and shifting equipment
  - toxic cleaning substances
- environmental requirements, including procedures for trapping, storing and disposing of cleaning fluids released during the process
- manual handling techniques, including those relating to:
  - using machinery for lifting engine blocks and engine components
  - using slings, chains and other lifting equipment according to safe work practices
- dismantling methods and procedures, including:
  - reasons for selecting chosen tools, techniques and equipment

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- hazards and fluid control measures associated with removal of engines and engine components, including housekeeping
- procedures for recording positions of components, including photographic evidence
- pre-evaluation checks to determine suitability of component to be re-used
- reasons for checking end float before disassembly
- cleaning solutions and cleaning procedures for components
- use of pullers, presses and specialised tools, and application of heat to dismantle components, including gears, pulleys and dowels
- procedures for recording facing directions of pistons, connecting rods, main and big end caps, and positions of removable counterweights and counterweight shaft assemblies
- precautions to be used when removing connecting rod cap
- removing crankshaft and identifying main bearing caps that have lost register
- removing dry and wet sleeves
- dismantling pistons from connecting rods
- removing camshaft bearings and balance/idler shaft bearings
- removing welsh plugs and oil gallery plugs
- removing diesel injection pumps
- dismantling components that have seized, bent or broken, including seized stud and bolt removal

- inspection, measurement and testing procedures, including:
  - characteristics of surface finishes and wear patterns as applied to:
    - cylinder bores, crankshafts, pistons, gears, cam followers, and camshafts
    - bearings and bushes
    - block facings
    - parting faces of connecting rod
    - main bearing caps
  - crack testing components
  - testing hardness of alloy cylinder blocks, pistons, crankshaft journals and camshaft followers
  - straightness of shafts
  - taper, ovality and wear of:
    - crankshaft and camshaft journals
    - main bearing and connecting rod tunnels
    - cylinder bores in conventional engine blocks and parent bores of engine blocks with dry sleeves
  - camshaft lobe lift
  - straightness of shafts
  - main bearing tunnels for alignment
  - connecting rod alignment and little end bore size
  - cylinder block flatness and deck height

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  - piston ring land clearance, piston skirt wear and gudgeon pin to piston clearance
  - cylinder liner register in both the upper and lower parts of the cylinder block
  - oil pump for serviceability
  - idler gear hub to bearing clearance
- requirements of Australian standards relevant to engine reconditioning, including:
  - AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
  - AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine blocks and sub-assemblies that they have dismantled and evaluated, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
- AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- three different multi-cylinder engine blocks specified in the performance evidence
- precision measuring equipment, including:
  - dial bore gauges
  - dial indicators
  - inside and outside metric and imperial micrometers

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- fixed and portable hand, air and power tools and lifting equipment suitable for dismantling and evaluating engine blocks and sub-assemblies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTM009 Fit sleeves and bore and hone engine cylinders

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to fit sleeves to restore engine cylinder blocks and to bore and hone the sleeves to specific tolerances. It involves preparing for the task, assessing damage and determining required repair action, boring, sleeving and honing engine cylinders, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The engines include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Manufacture

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to bore engine	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
cylinder	1.2 Engine block, boring and sleeving information is sourced and interpreted 1.3 Tools and measuring equipment for boring are selected and checked for serviceability 1.4 Hazards associated with the work are identified and risks are managed 1.5 Engine cylinder is measured and ***calibration requirements*** for boring are determined 1.6 Engine cylinder block is prepared for boring, and reboring machine is prepared to accept engine cylinder block according to manufacturer specifications and workplace procedures 1.7 Engine cylinder block is correctly positioned and clamped, and limit stop is set according to manufacturer specifications and workplace procedures
2. Bore engine cylinder	2.1 Cutting tools are mounted and positioned, and worn and damaged cutting tools are identified and replaced or sharpened 2.2 Boring operations are carried out at correct speeds and feed rates according to workplace procedures and ***safety and environmental requirements***, and following machinery safe operating procedures 2.3 Engine cylinder is measured to ensure compliance with specifications 2.4 Boring operations are completed to required specifications and honing allowances according to workplace procedures and safety requirements, and following machinery safe operating procedures
3. Prepare to sleeve engine cylinder	3.1 Tools and equipment for sleeving are selected, checked and prepared for operation according to manufacturer specifications and workplace procedures 3.2 Measuring and calibration requirements for sleeving are determined and required sleeve is selected 3.3 Engine cylinder block or barrel is prepared for sleeving according to manufacturer specifications and workplace procedures
4. Sleeve engine cylinder	4.1 Sleeving operations are carried out according to workplace procedures and safety requirements, and following machinery safe operating procedures 4.2 Sleeves are measured to ensure compliance with specifications, including sleeve protrusion 4.3 Sleeves are bored as required to required specifications and honing allowances according to workplace procedures and safety

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	requirements, and following machinery safe operating procedures
5. Prepare to hone engine cylinder	5.1 Bored engine block is cleaned of residue and swarf according to manufacturer specifications and workplace procedures 5.2 Tools and equipment for honing are selected, checked and prepared for operation according to manufacturer specifications and workplace procedures 5.3 Clearances are measured and honing requirements are determined 5.4 Honing machine is prepared to accept engine cylinder block according to manufacturer specifications and workplace procedures 5.5 Engine cylinder block is positioned and securely clamped, and required hone stroke is set according to manufacturer specifications and workplace procedures 5.6 Hone stones are selected and speed is set to achieve required finish and cross hatch
6. Hone engine cylinder	6.1 Engine cylinder is honed at correct speed and rate to required finish according to workplace procedures and safety requirements and following machinery safe operating procedures 6.2 Engine cylinder is measured to ensure compliance with specifications 6.3 Honing operations are completed to required piston to bore clearance according to workplace procedures and safety requirements and following machinery safe operating procedures 6.4 Engine cylinder block is thoroughly cleaned of residual honing oil according to workplace procedures
7. Complete sleeving, boring and honing processes	7.1 Final inspection is made to ensure finished work complies with workplace requirements 7.2 Bright surfaces are treated with rust prevention solution and engine cylinder block is prepared for further process or storage according to workplace procedures 7.3 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 7.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• identify and interpret engine component specifications from workshop literature • interpret safe operating procedures for engine component rebuild machinery from operating manuals and signs.
Writing skills to:	• legibly and accurately fill out workplace documentation when making recommendations.

Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop literature, and machinery dials, gauges and computer readouts
	• use basic mathematical operations, including addition and subtraction, to:
	  • convert metric dimensions to imperial, and imperial dimensions to metric
	  • calculate tolerances and clearances.

Planning and organising skills to:	• select best tooling option for the work and sequence components to reduce time and material wastage.
Technology skills to:	• use metric and imperial precision measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Calibration requirements must include:	• determining:
	  • piston to bore clearance
	  • sizes of cut
	  • required honing allowance.

Safety and environmental	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including:

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requirements must include:	• procedures for selecting and using personal protective equipment (PPE) for:
	  • handling engine cylinder blocks
	  • using boring and honing machines
	  • using chemical cleaning and lubricating agents
	• safe operating procedures for boring and honing machinery, including:
	  • electrical safety of boring and honing machinery
	  • boring and honing machinery movement and operation
	• environmental requirements, including procedures for trapping, storing and disposing of cleaning and lubricating fluids released during the machining process.

Unit Mapping Information

Equivalent to AURTTM3009 Fit sleeves and bore and hone engine cylinders

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTM009 Fit sleeves and bore and hone engine cylinders

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- work on three different engine blocks as follows:
  - bore one engine block to accept parallel liners with correct interference fit
  - bore one engine block to accept flanged liners with correct interference fit
  - bore and hone the cylinders of a different multi-cylinder engine block to achieve correct piston to bore clearance.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to fitting sleeves and boring and honing engine cylinders, including:
  - procedures for selecting and using personal protective equipment (PPE) for:
    - handling engine cylinder blocks
    - using boring and honing machines
    - using chemical cleaning and lubricating agents
  - safe operating procedures for boring and honing machinery, including:
    - electrical safety of boring and honing machinery
    - boring and honing machinery movement and operation
- environmental requirements, including procedures for trapping, storing and disposing of cleaning and lubricating fluids released during the machining process
- types and application of sleeves, including:
  - dry sleeves, including:
    - interference fit parallel sleeve

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        - interference fit flanged sleeves
        - chrome type finished-to-size dry flanged sleeves
    - wet sleeves, including:
        - flanged
        - stepped
- sleeve fitting procedures, including:
    - interference sleeves, including fitting parallel sleeves to step in parent bore
    - wet sleeves
    - checking sleeve height
- types, characteristics and limitations of honing and boring machines, including:
    - types and grades of boring tools
    - types and grades of honing stones
    - hand-held and machine-operated hones
- tool sharpening methods, including:
    - maintaining sharpness of tool throughout boring operations
    - compensation methods for tool wear throughout boring operations
- boring methods and procedures, including:
    - determining required size of bore, including honing allowance
    - preparing engine cylinder block for boring, and setting engine cylinder block into boring machine, including jigs, rails and clamps
    - setting boring tool to correct diameter, locking boring tool, and setting limit stop
    - reasons for taking a test cut
    - speed and feed rates of boring tool for differing materials, including alloysil or nicolsil, and for bore diameters
    - methods for setting speed and feed rate of boring tools
- honing methods and procedures, including:
    - cleaning engine cylinder block before and after honing
    - preparing portable and stationary honing machines, setting engine cylinder block into honing machine, and setting hone stroke
    - setting honing speeds and feed rates to achieve required finish
    - methods of measuring bores for taper, ovality and barrelling
- types and application of cleaning, lubricating and protective agents, including:
    - material suitability
    - application of lubricating agents for different speeds and feed rates of boring machines and honing machines
    - hazards associated with chemical cleaning and lubricating agents
- requirements of Australian standards relevant to engine reconditioning, including:
    - AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
    - AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines

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- post-repair procedures, including rust protection.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine cylinders that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
- AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- three different multi-cylinder engine blocks as specified in the performance evidence
- engine boring and honing machines
- precision measuring equipment, including:
  - dial bore gauges
  - dial indicator gauges
  - inside and outside metric and imperial micrometers.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTM010 Heat treat, straighten and reclaim engine components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to apply heat treatment and straightening techniques to repair damaged or under sized engine components, and perform the necessary machining to reclaim engine components in an engine reconditioning process. It involves preparing for the task, heat treating, straightening and reclaiming engine components, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The engine components include those in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Manufacture

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to undertake heat treatment procedures	1.1 Job requirements are determined from workplace instructions 1.2 Engine component reclamation procedures are sourced and interpreted, and most appropriate method is selected 1.3 Tools and measuring equipment are selected and checked for serviceability 1.4 Hazards associated with the work are identified and risks are managed 1.5 Engine component is prepared for heat treatment method according to ***safety and environmental requirements***
2. Heat treat engine component for reclamation	2.1 Heat treatment method is used to repair engine component according to workplace procedures and safety requirements, and following machinery safe operating procedures 2.2 Engine component is measured to ensure compliance with specifications 2.3 Heat treatment method is completed in readiness for further repair according to workplace procedures and safety requirements, and following machinery safe operating procedures
3. Straighten engine component for reclamation	3.1 Engine component is prepared for straightening method according to workplace procedures, and safety and environmental requirements 3.2 Component is mounted and clamped in straightening equipment according to manufacturer specifications and workplace procedures 3.3 Engine component is straightened according to workplace procedures and safety requirements, and following machinery safe operating procedures 3.4 Engine component is measured to ensure compliance with specifications 3.5 Straightening process is completed in readiness for further repair according to workplace procedures and safety requirements, and following machinery safe operating procedures
4. Perform machining to reclaim component	4.1 Machining is carried out according to workplace procedures and safety and environmental requirements, and following machinery safe operating procedures 4.2 Component is measured to ensure compliance with manufacturer specifications 4.3 Machining operations are completed according to manufacturer

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	specifications, workplace procedures, and safety and environmental requirements, and following machinery safe operating procedures
5. Complete repair processes	5.1 Final inspection is made to ensure finished work complies with workplace requirements 5.2 Bright surfaces are treated with rust prevention solution and engine component is prepared for further process or storage according to workplace procedures 5.3 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret safe operating procedures for engine component rebuild machinery from workshop literature and signs.
Writing skills to:	• legibly and accurately fill out workplace documentation to record measurements.

Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop literature, and machinery dials, gauges and computer readouts
	• use basic mathematical operations, including addition and subtraction, to:
	  • convert metric dimensions to imperial, and imperial dimensions to metric
	  • calculate tolerances and clearances.

Planning and organising skills to:	• select best heating, straightening and reclamation options for the work and sequence procedure to reduce time and material wastage.
Technology skills to:	• use precision metric and imperial measuring equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE)
	  • using heating torches, ovens, presses and straightening tools
	• environmental requirements, including procedures for trapping, storing and disposing of cooling and lubricating fluids released during the machining process.

Unit Mapping Information

Equivalent to AURTTM3010 Heat treat, straighten and reclaim engine components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTM010 Heat treat, straighten and reclaim engine components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- heat treat, straighten and machine three different engine components, including one engine cylinder head.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to heat treating, straightening and reclaiming engine components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using heating torches, ovens, presses and straightening tools
- environmental requirements, including procedures for trapping, storing and disposing of cooling and lubricating fluids released during the machining process
- types, characteristics, uses and limitations of reclamation techniques, including:
  - heat treatment techniques, including:
    - effects of heat on different metals and heating procedures
    - hardening and tempering techniques, including thermal stress relieving to stabilise crankshafts and applying Tufftride and nitride
  - straightening techniques, including:
    - cylinder head straightening
    - crankshaft, camshaft and connecting rod straightening
  - machining surfaces to achieve tolerances and required finish
- requirements of Australian standards relevant to engine reconditioning, including:

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  - AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
  - AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- post-repair procedures, including component surface oxidation protection.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine components that they have heat treated, straightened and reclaimed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
- AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- three different engine components, including one engine cylinder head
- heating equipment and tools for heat treating, straightening and reclaiming engine components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTM011 Recondition engine cylinder heads

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to recondition engine cylinder heads as part of an engine reconditioning process. It involves preparing for the task, determining engine cylinder head damage and required repair action, preparing reconditioning machines, performing machining to specifications and workplace requirements, reassembling and testing the cylinder head, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The engine cylinder heads include overhead valve or overhead camshaft design cylinder heads in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Manufacture

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to undertake engine cylinder head reconditioning	1.1 Job requirements are determined from workplace instructions 1.2 Cylinder head dismantling procedures are sourced and interpreted 1.3 Tools and measuring equipment are selected and checked for serviceability 1.4 Hazards associated with the work are identified and risks are managed 1.5 Cylinder head is cleaned according to ***safety and environmental requirements*** and relevant ***Australian standards***, and **positions of auxiliary** equipment are recorded, including photographic evidence
2. Dismantle engine cylinder head	2.1 Covers and ancillary components are removed, cleaned and stored according to workshop procedures 2.2 Cylinder head is dismantled according to safety requirements and laid out in a logical order using approved methods, tools and equipment 2.3 Component parts are cleaned using appropriate cleaning agents for the type of material and kept in a logical order in preparation for evaluation
3. Determine repair procedures	3.1 Cylinder head is hardness tested as required according to manufacturer specifications, workplace procedures and safety requirements 3.2 Cylinder head is pressure and/or crack tested according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Cylinder head and component parts are ***inspected, measured and tested*** against manufacturer specifications and tolerances and according to workplace procedures and safety and environmental requirements
4. Recondition engine cylinder head and component parts	4.1 Components are adjusted and/or machined against manufacturer specifications and tolerances and according to workplace procedures, relevant Australian standards, and safety and environmental requirements 4.2 Adjustments and/or machining of components are achieved without causing damage to components or system 4.3 Cylinder head is thoroughly cleaned and oil and waterways are cleared using appropriate tools
5. Assemble engine	5.1 Cylinder head is assembled in correct order and without damage,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
cylinder head	against manufacturer specifications and tolerances and according to workplace procedures, relevant Australian standards and safety requirements 5.2 Assembled components are measured according to manufacturer specifications and workplace procedures 5.3 Assembled component clearances and tolerances are adjusted to the tolerance required by manufacturer specifications according to workplace procedures 5.4 Assembled engine cylinder head is tested and adjusted against manufacturer specifications and tolerances and according to workplace procedures, relevant Australian standards and safety requirements 5.5 Bright surfaces are treated with rust prevention solution and cylinder head is prepared for further process or storage according to workplace procedures
6. Complete work processes	6.1 Final inspection is made to ensure finished work complies with workplace requirements and engine cylinder heads are presented ready for use or storage 6.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 6.3 Tools and equipment are checked and stored according to workplace procedures 6.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• identify and interpret engine cylinder head specifications from workshop literature • interpret engine cylinder head rebuild machinery safe operating

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Skills	Description
	procedures from operating manuals and signs.
Writing skills to:	• legibly and accurately fill out workplace documentation to record measurements.

Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop literature, and machinery dials, gauges and computer readouts
	• use basic mathematical operations, including addition and subtraction, to:
	  • convert metric dimensions to imperial, and imperial dimensions to metric
	  • calculate tolerances and clearances.

Planning and organising skills to:	• select best tooling option for the work and sequence procedure to reduce time and material wastage.
Technology skills to:	• use precision metric and imperial measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
	  • operational risk assessment and treatments associated with:
	  • electrical safety of power tools
	  • manual and mechanical lifting and shifting equipment
	  • toxic cleaning substances
	  • selecting and using personal protective equipment (PPE) for handling engine cylinder heads and using specialised equipment
	• environmental requirements, including procedures for trapping, storing and disposing of cleaning fluids and machining waste released during reconditioning process.

Australian standards must include:	• AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines • AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines.

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Inspecting, measuring and testing must include:	• checking for straightness of both sides of cylinder head and all manifold faces • checking camshaft tunnels for wear and pick-up • checking water jackets for corrosion • checking valve suitability for refacing, including stem condition • checking valve guide condition and material • resurfacing valves • sizing and fitting K lines • machining and fitting valve seats • establishing valve stem protrusion.

Unit Mapping Information

Equivalent to AURTTM3011 Recondition engine cylinder heads

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTM011 Recondition engine cylinder heads

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- recondition two of the following engine cylinder heads:
  - overhead valve (OHV) petrol cylinder head
  - overhead camshaft (OHC) petrol cylinder head
  - diesel cylinder head
- resurface a cylinder head.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to reconditioning engine cylinder heads, including:
  - operational risk assessment and treatments associated with:
    - electrical safety of power tools
    - manual and mechanical lifting and shifting equipment
    - toxic cleaning substances
  - selecting and using personal protective equipment (PPE) for handling engine cylinder heads and using specialised equipment
- environmental requirements, including procedures for trapping, storing and disposing of cleaning fluids and machining waste released during reconditioning process
- procedures for removing cylinder head from engine block
- dismantling methods and procedures relating to cylinder heads
- cleaning methods and procedures relating to cylinder heads
- procedures for measuring, testing and evaluating cylinder heads, including:

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    - hardness of aluminium alloy cylinder heads and re-hardening aluminium alloy cylinder heads
    - visual inspections
    - cylinder head testing, including:
        - dye penetrant for alloy cylinder heads
        - wet and dry magnetic particle for cast iron cylinder heads
        - vacuum for valve leakage
        - pressure for porosity
        - inspecting valve guides and valve seats
- procedures for measuring, testing and evaluating associated parts, including inspecting camshafts, valves, valve springs, valve spring seats, valve spring retainers, collets and lash caps, rocker arms, rocker shafts and pushrods
- procedures for repairing cylinder heads and associated components, including:
    - heat treating aluminium alloy cylinder heads
    - straightening cylinder heads
    - repairing cracks in cylinder heads
    - welding aluminium alloy and cast iron cylinder heads
    - types of surface finishes for different cylinder head gaskets
    - surfacing cylinder heads, including manifold faces
    - repairing valve guides, valve seats, rocker arms and rocker shafts
    - replacing valve guides
    - cutting valve seats to required angles
    - re-facing valves in valve re-facer
    - setting valve stem protrusion
    - setting valve masking heights in diesel cylinder heads
    - fitting injector tubes and setting injector protrusion
    - cleaning cylinder heads of residue and swarf, including removing residue from bead cleaning
- procedures for assembling cylinder heads, including:
    - refitting welsh plugs and oil gallery plugs, valves, springs, spring seats, retainers, collets lash caps, camshafts, rocker gear, cam followers and associated components
    - reasons for setting valve timing before fitting cylinder head to block
    - evaluating and setting rocker arm geometry
    - preparing cylinder block to accept cylinder head
    - fitting head gaskets and cylinder heads to engine blocks
    - tightening procedures for cylinder head bolts
- requirements of Australian standards relevant to engine reconditioning, including:
    - AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
    - AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines

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- post-repair test procedures, including machined surface protection.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine cylinder heads that they have reconditioned, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available.

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
- AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- precision measuring equipment relevant to the engine component and work process
- three different multi-cylinder engine cylinder heads as specified in the performance evidence
- fixed and portable hand, air and power tools, lifting equipment and material suitable for reconditioning cylinder heads.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTM012 Carry out camshaft grinding

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to grind engine camshafts to specific under sizes. It involves preparing for the task, determining camshaft damage and required repair action, preparing and using grinding machines to grind camshafts to specifications and workplace requirements, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The camshafts include those of engines in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Manufacture

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to grind	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
camshaft	1.2 Camshaft is ***cleaned and inspected***, lobe lift is measured, and condition is reported 1.3 Camshaft grinding information is sourced, procedures and methods are analysed, and appropriate grinding machine and master are selected for camshaft 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and measuring equipment are selected and checked for serviceability 1.6 Camshaft grinding wheel is ***dressed*** to match job requirements 1.7 Camshaft is positioned in grinder and clamped according to manufacturer specifications and workplace procedures, and centre run-out and bend are checked
2. Grind camshaft lobes	2.1 Camshaft grinder movement is set to master according to manufacturer procedures, and position of camshaft to master is ***verified statically*** 2.2 First set of camshaft lobes are ground according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.3 Master is re-phased to suit next cylinder's lobes, and lobes are ground according to manufacturer specifications, workplace procedures, and safety and environmental requirements 2.4 Remaining camshaft lobes are ground according to manufacturer specifications, workplace procedures, and safety and environmental requirements 2.5 Camshaft is measured to ensure compliance with specifications and that base circles are true
3. Finish camshaft grinding	3.1 Camshaft is prepared for phosphating according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.2 Camshaft is phosphated according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.3 Journals are linished according to manufacturer specifications, workplace procedures, and safety and environmental requirements 3.4 Camshaft profile is identified on camshaft according to workplace procedures 3.5 Bright surfaces are treated with rust prevention solution and

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	camshaft is prepared for further process or storage according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure finished work complies with workplace requirements and camshaft is presented ready for use or storage 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate camshaft machine settings in workshop and manufacturer literature.
Reading skills to:	• identify and interpret camshaft specifications from workshop literature • interpret machinery safe operating procedures from operating manuals.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording: • parts and materials used • measurements and camshaft specifications.
Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop literature, and machinery dials, gauges and computer readouts • use basic mathematical operations, including addition and subtraction, to: • convert metric dimensions to imperial, and imperial dimensions to metric

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Skills	Description
	• calculate tolerances and clearances.
Planning and Organising skills to:	• select best tooling option for the work and sequence procedure to reduce time and material wastage.
Technology skills to:	• use precision metric and imperial measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Cleaning and inspecting must include:	• determining camshaft lobe profile and timing requirements
	• checking camshaft centre run-out
	• checking camshaft for:
	  • bend
	  • drive pin position and condition
	  • fuel pump lobe
	  • gear condition.

Dressing must include:	• dressing grinding wheel by truing
	• preparing for:
	  • roughing
	  • finishing.

Verifying statically must include:	• checking for lobe taper • checking wheel to lobe contact.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
	  • procedures for selecting and using personal protective equipment (PPE) for:
	  • handling camshafts
	  • using chemical cleaning agents
	  • operational risk assessment and treatments associated with:
	  • electrical safety of grinding machinery
	  • grinding machinery movement and operation
	• procedures for trapping, storing and disposing of cleaning and lubricating fluids released during the grinding process.

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Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTM012 Carry out camshaft grinding

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- grind one camshaft of an in-line engine with at least four cylinders.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
  - procedures for selecting and using personal protective equipment (PPE) for:
    - handling camshafts
    - using chemical cleaning agents
  - operational risk assessment and treatments associated with:
    - electrical safety of grinding machinery
    - grinding machinery movement and operation
- environmental requirements, including procedures for trapping, storing and disposing of cleaning and lubricating fluids released during the grinding process
- types, characteristics and limitations of camshaft grinding machines, including use of cam doctors
- cleaning and inspection procedures, including:
  - determining camshaft lobe profile and timing requirements
  - checking camshaft centre run-out
  - checking camshaft for bend
- procedures for preparing camshaft grinding wheel, including:

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    - dressing and truing to restore original cutting geometry and correct flatness and roundness
- procedures for camshaft lobe grinding, including:
    - roughing and finishing
- procedures for finalising camshaft grinding, including:
    - linishing
    - phosphating
    - identifying camshaft profile on camshafts
- requirements of Australian standards relevant to engine reconditioning, including:
    - AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
    - AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- post-grinding procedures, including protection of machined surfaces.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the camshaft grinding that they have carried out, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer camshaft specifications
- AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
- AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- camshaft from engine as specified in the performance evidence
- engine camshaft grinding machine

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- precision measuring equipment, including:
  - dial indicators
  - inside and outside metric and imperial micrometers.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTQ001 Inspect and service final drive assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service final drive assemblies. It involves preparing for the task, inspecting the assembly, reporting the inspection findings, servicing and adjusting the assembly, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The final drive assemblies include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service final drive assembly	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect final drive assembly	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service final drive assembly	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and **environmental requirements,** and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to final drive assemblies.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• calculate liquid volumes and service schedule intervals using basic mathematical operations, including addition and subtraction.
Problem solving skills to:	• refer problems outside area of responsibility to appropriate person.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with hazardous final drive lubricants • environmental requirements, including procedures for trapping, storing and disposing of oil released from final drive assemblies.

Unit Mapping Information

Equivalent to AURTTQ2001 Service final drive assemblies

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTQ001 Inspect and service final drive assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the final drive assemblies of two different vehicles or machinery, in which the work must involve:
  - evaluating lubricant condition
  - inspecting and adjusting lubricant levels
  - visually inspecting the assemblies for leaks or damage.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing final drive assemblies, including procedures for working with hazardous final drive lubricants
- environmental requirements, including procedures for trapping, storing and disposing of oil released from final drive assemblies
- identification and function of final drive assemblies and components, including:
  - banjo-type final drives
  - unitised final drives
  - transaxle final drives
  - differentials, including limited slip differentials
- types and applications of final drive assembly lubricants and additives
- inspection procedures for final drive assembly, including:
  - checking assembly for lubricant leaks or physical damage
  - checking lubricant condition and levels

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- service and adjustment procedures for final drive assembly, including topping up or replacing lubricant as required
- post-service testing procedures for final drive assembly.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the final drive assemblies that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer final drive specifications
- two different vehicles or machinery with final drive assemblies requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing final drive assemblies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTQ002 Remove and refit driveline components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and refit driveline components. It involves preparing for the task, testing, removing, refitting and adjusting driveline components, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The driveline systems include those of light vehicles, four wheel drive (4WD) vehicles, and light commercial vehicles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to test and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
remove driveline components	1.2 Driveline removal, refit and adjustment procedures and information are sourced and interpreted 1.3 Driveline testing procedures are sourced and interpreted from manufacturer specifications 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment are selected and checked for serviceability
2. Test and remove driveline components	2.1 Driveline is tested according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Driveline components are removed according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 2.3 Driveline components are inspected for faults according to manufacturer specifications, workplace procedures and safety requirements 2.4 Results of driveline tests are reported according to workplace procedures
3. Refit and adjust driveline components	3.1 Driveline components are examined for serviceability prior to commencing the refitting procedures 3.2 Driveline serviceable components are refitted according to manufacturer specifications, workplace procedures and safety requirements 3.3 Driveline is lubricated and adjusted according to manufacturer specifications, workplace procedures and safety requirements 3.4 Driveline is checked for correct assembly and operation according to manufacturer specifications and workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking driveline specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording parts and material used.
Oral communication skills to:	• clarify instructions, report test findings, and make repair recommendations.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to measure driveline components, calculate distances, driveline angles, tolerances and deviations from manufacturer specifications • calculate and convert metric and imperial systems of measurement • use measuring equipment, including digital protractors.
Technology skills to:	• use precision measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • using driveline tools and equipment
	  • lifting and supporting vehicles.

Unit Mapping Information

Equivalent to AURTTQ2002 Remove and refit driveline components

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTQ002 Remove and refit driveline components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and refit the following driveline components:
  - both drive shafts of a front wheel drive light vehicle
  - drive shaft of a rear wheel drive light vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and refitting driveline components, including procedures for:
  - using driveline tools and equipment
  - lifting and supporting vehicles
- principles of driveline operation
- construction of drive shafts, including:
  - constant velocity (CV) joints
  - universal joints
- driveline test procedures
- dismantling, assembling and adjusting procedures, including:
  - types and applications of lubricants
  - methods of fitting retaining clips to CV joints.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the driveline components that they have removed and refitted, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application

The following resources must be made available:

- workplace location or simulated workplace
- workplace instructions
- vehicle driveline specifications
- driveline components specified in the performance evidence
- tools, equipment and materials for removing and refitting driveline components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTQ003 Inspect and service drive shafts

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service vehicle drive shafts. It involves preparing for the task, inspecting the drive shaft for damage or abnormal wear, reporting the inspection findings, servicing and adjusting the drive shaft, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The drive shafts include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service drive shaft	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect drive shaft	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service drive shaft	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures and safety **requirements,** and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Reading skills to:	• locate information from manufacturer and workshop literature when seeking service procedures and specifications relating to drive shafts.
Writing skills to:	• legibly and accurately fill out documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• measure components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Problem solving skills to:	• refer problems outside area of responsibility to appropriate person.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with rotating shafts
	  • handling lubricants.

Unit Mapping Information

Equivalent to AURTTQ2003 Service final drive (driveline)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTQ003 Inspect and service drive shafts

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the drive shafts of two different vehicles or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing drive shafts, including procedures for:
  - working with rotating shafts
  - handling lubricants
- identification and function of drive shaft components, including:
  - single and multi-piece shafts
  - universal joints
  - rubber type couplings
  - slip joints
  - support bearings
  - constant velocity joints
- types and applications of drive shaft lubricants
- inspection procedures for drive shafts, including:
  - component wear or damage
  - lubricant leaks
- service and adjustment procedures for drive shafts, including lubricating components as required

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- post-service testing procedures of drive shafts.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the drive shafts that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer drive shaft specifications
- two different vehicles or machinery with drive shafts requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing drive shafts.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTQ004 Overhaul final drive assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return a final drive assembly to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the final drive assembly, carrying out the overhaul procedures, reassembling and testing the final drive assembly, and completing workplace processes and documentation.

It applies to those working on final drive assembles in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Driveline and Final Drives

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle final drive assembly	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate final drive assembly and components	2.1 Final drive assembly is dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements,*** and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Components repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked according to manufacturer procedures 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble final drive assembly and components	4.1 Final drive assembly is assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of final drive assembly is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace procedures and safety and environmental requirements, and any

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and final drive assembly is presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for final drive assemblies efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking final drive assembly specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure final drive assembly components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed

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Skills	Description
skills to:	within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as micrometers and dial bore gauges • use specialised final drive assembly overhaul equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for using:
	  • specialised final drive assembly overhaul tools, equipment and machinery
	  • chemicals and toxic substances
	  • manual and mechanical lifting equipment
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from final drive assemblies.

Unit Mapping Information

Equivalent to AURTTQ4004 Overhaul final drive assemblies

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTQ004 Overhaul final drive assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul three different final drive assemblies, one of which must include a limited slip final drive assembly.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) procedures relating to overhauling final drive assemblies, including procedures for using:
  - specialised final drive assembly overhaul tools, equipment and machinery
  - chemicals and toxic substances
  - manual and mechanical lifting equipment
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from final drive assemblies
- types, characteristics and operating principles of final drive assemblies, including limited slip differentials
- final drive assembly overhaul procedures, including:
  - methods for cleaning and preparing final drive assemblies for overhaul
  - final drive dismantling procedures
  - final drive component inspection, measuring and evaluation procedures, including:
    - non-destructive testing procedures, including dye penetrant testing and magnetic particle testing
    - measuring crown wheel run-out and differential case assembly side play
    - measuring ring gear mounting surface run-out

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    - measuring limited slip differential components
  - final drive component repair and adjustment procedures, including:
    - bearings and shims
    - collapsible spacers
    - limited slip differential components
  - final drive assembly procedures, including procedures for adjusting component tolerances, including:
    - pinion gear depth
    - pinion bearing preload
    - crown wheel and pinion backlash
    - side bearing preload
    - obtaining and interpreting pinion to crown wheel contact pattern
    - adjustment procedures to gain correct contact pattern
- post-overhaul testing procedures for final drive assemblies.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the final drive assemblies that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer final drive assembly specifications
- three different final drive assemblies requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting final drive assemblies.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTW001 Carry out soft soldering techniques

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out soft soldering of vehicle components. It involves preparing for the task, carrying out soft soldering procedures, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The components to be soft soldered include ferrous or non-ferrous materials in vehicles from all sectors of the industry, including vehicle radiators or fuel tanks.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to carry out soft	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
soldering	1.2 Soft soldering procedures and information are sourced and interpreted 1.3 Repair options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Materials, tools and equipment are selected and checked for serviceability 1.6 Personal protective equipment (PPE) is chosen and prepared according to workplace procedures and safety requirements 1.7 Components and materials to be soft soldered are cleaned and prepared according to workplace and safety requirements
2. Carry out soft soldering	2.1 Soldering is carried out using correct and appropriate techniques, including appropriate use of flux, according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to components, systems or equipment 2.2 Soldered joint is tested using appropriate techniques and equipment to ensure compliance with manufacturer specifications
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and component or vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Reading skills to:	• interpret safe operating procedures for soft soldering equipment from workplace and manufacturer literature • interpret information from manufacturer and workshop literature when seeking component specifications.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording parts and material used.
Oral communication skills to:	• clarify instructions.
Numeracy skills to:	• measure components and use basic mathematical operations to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with:
	  • cleaning and heating equipment
	  • corrosive fluxes
	  • volatile liquids and fumes
	• environmental requirements, including trapping, storing and disposing of waste produced during soft soldering process.

Unit Mapping Information

Equivalent to AURTTW2001 Carry out soft soldering procedures

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTW001 Carry out soft soldering techniques

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out soft soldering to repair:
  - a radiator or fuel tank using a soldering iron
  - a radiator using a direct flame.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to soft soldering, including procedures for working with:
  - cleaning and heating equipment
  - corrosive fluxes
  - volatile liquids and fumes
- environmental requirements, including procedures for trapping, storing and disposing of waste produced during soft soldering process
- soft soldering procedures, including:
  - component cleaning and preparation
  - types and applications of fluxes
  - methods of applying heat, including:
    - soldering irons
    - direct flame
- soft soldering testing procedures, including pressure testing.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the soft soldering work they have completed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- components as specified in the performance evidence requiring soft soldering repair or assembly
- tools, equipment and materials appropriate for soft soldering components, including:
  - required fluxes
  - required heating equipment, including:
    - soldering iron
    - direct flame equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTW002 Set, operate and monitor specialist reconditioning machines

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to set, operate and monitor specialist machines used in reconditioning engine or vehicle components. It involves preparing for the task, setting up, operating and monitoring specialist machines, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. This unit does not cover crankshaft or camshaft grinding.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for work	1.1 Job requirements are determined from workplace instructions 1.2 Machine information is sourced, procedures and methods are analysed, and tools required for the machining process are selected 1.3 Tools and measuring equipment are selected and checked for serviceability 1.4 Hazards associated with the work are identified and risks are managed 1.5 Technical and calibration requirements for machining are determined and support equipment is identified and prepared 1.6 Components are measured and required repair action is determined
2. Set machine	2.1 Machine is set up according to manufacturer specifications and workplace procedures, and without causing damage to any component or system 2.2 Component is positioned and clamped according to manufacturer specifications and workplace procedures 2.3 Machine is adjusted to meet operational requirements and specifications using appropriate measuring equipment and according to manufacturer specifications and workplace procedures 2.4 Tooling and accessories for the job are selected, and worn or damaged tooling is identified and changed or sharpened, according to manufacturer specifications and workplace procedures
3. Operate and monitor machine	3.1 Machine is operated according to workplace procedures and ***safety requirements***, following machinery safe operating procedures and without causing damage to any component or system 3.2 Components are measured to ensure compliance with specifications 3.3 Sharpness of tooling is monitored and tooling is sharpened or replaced to meet requirements 3.4 Finished product is checked for alignment, tolerance and finish according to specifications and workplace procedures
4.1 Complete work	4.1 Final inspection is made to ensure finished work complies with

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
processes	workplace requirements 4.2 Bright surfaces are treated with rust prevention solution and component is prepared for further process or storage according to workplace procedures 4.3 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information quickly and efficiently.
Reading skills to:	• interpret machinery safe operating procedures from workshop literature and signs.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording parts and material used.

Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop literature, and machinery dials, gauges and computer readouts
	• use basic mathematical operations, including addition and subtraction, to:
	  • convert metric dimensions to imperial, and imperial dimensions to metric
	  • use metric and imperial precision measuring equipment
	  • calculate tolerances and clearances, and deviations from manufacturer specifications.

Planning and organising skills to:	• prepare work area and machines for operations • select best tooling option for the work and sequence procedure to reduce time and material wastage.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
	  • procedures for selecting and using personal protective equipment (PPE), including:
	  • eye, hand and feet protection
	  • protective clothing
	  • operational risk assessment and treatments associated with:
	  • electrical safety of machinery
	  • machinery movement and operation.

Unit Mapping Information

Equivalent to AURTTW3002 Set, operate and monitor specialist machines

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTW002 Set, operate and monitor specialist reconditioning machines

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- set up, operate and monitor machine operations for three tasks, including:
  - one precision grinding operation
  - one milling or boring operation.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to setting up, operating and monitoring specialist machinery, including:
  - procedures for selecting and using personal protective equipment (PPE), including:
    - eye, hand and feet protection
    - protective clothing
  - operational risk assessment and treatments associated with:
    - electrical safety of machinery
    - machinery movement and operation
- basic machining procedures for commonly used specialist reconditioning machines, including:
  - sharpening and shaping tools
  - identifying worn and damaged cutting tools
  - correctly mounting and positioning cutting tools
  - setting machining parameters to achieve job requirements and maximise tool life, including speeds and feeds

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  - types and application of coolants and lubricants
  - measuring to specified tolerances and dimensions
- type, characteristics, uses and limitations of commonly used specialist reconditioning machines
- techniques for reading and interpreting technical information, including technical drawings.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the specialist machines that they have set, operated and monitored, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions detailing work requirements, including work specifications
- specialist reconditioning machines specified in the performance evidence
- precision measuring equipment, including micrometers
- material relevant to carrying out machining operations.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTW003 Carry out machining operations

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out machining operations on a range of automotive components to specific tolerances. It involves preparing for the task, selecting the correct machining operation, setting up and machining components to specifications, and completing workplace processes and documentation. It also involves restoring surface finishes and tolerances, and aligning components.

It applies to those working in the automotive service and repair industry. The machining operations apply to those using lathes, and milling or surface grinding machines.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to machine material	1.1 Job requirements are determined from workplace instructions 1.2 Machine and material information is sourced and interpreted 1.3 Machining procedures and methods are analysed, and those most appropriate to the circumstances are selected 1.4 Hazards associated with work are identified and risks managed 1.5 ***Tools and equipment*** are selected and prepared for operation according to manufacturer specifications and workplace procedures
2. Set up machinery prior to machining	2.1 Components to be machined are positioned and clamped according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Speed and feed that suit component ***materials*** are selected according to manufacturer specifications and workplace procedures 2.3 Machine and components are set up according to industry standards and manufacturer current specifications for methods, equipment used and tolerances relative to component
3. Machine components	3.1 Components are machined according to workplace procedures and safety requirements, and following machinery safe operating procedures 3.2 Component is measured for size and finish according to manufacturer specifications and workplace procedures 3.3 Size and finish are compared with specifications 3.4 Machining is completed to required specifications according to workplace procedures and safety requirements, and following machinery safe operating procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and component is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret machinery safe operating procedures from workshop literature and signs.
Writing skills to:	• legibly and accurately fill out workplace documentation when recording parts and material used.
Numeracy skills to:	• interpret numerical information in manufacturer specifications, workshop manuals, and machinery dials and gauges • convert metric dimensions to imperial, and imperial dimensions to metric • use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• select best tooling option for the work and sequence procedure to reduce time and material wastage.
Technology skills to:	• use precision measuring equipment, including inside and outside metric and imperial micrometers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include:	• two of the following machines:
	  • lathe
	  • mill
	  • surface grinder
	• measuring equipment, including micrometers and vernier gauges.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including operational risk assessment and treatments associated with:

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	• electrical safety of machinery • machinery movement and operation.
Materials must include:	• ferrous metal • non-ferrous metal.

Unit Mapping Information

Equivalent to AURTTW3003 Carry out machining operations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTW003 Carry out machining operations

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out machining operations on both ferrous and non-ferrous materials, using two of the following machines:
  - lathe
  - mill
  - surface grinder.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to carrying out machining operations, including operational risk assessment and treatments associated with:
  - electrical safety of machinery
  - machinery movement and operation
- basic machining procedures, including:
  - sharpening and shaping tools
  - identifying worn and damaged cutting tools
  - mounting and positioning cutting tools
  - setting machining parameters to achieve job requirements and maximise tool life, including speeds and feeds
  - types and application of coolants and lubricants
  - measuring to specified tolerances and dimensions
- procedures for machining using a lathe, mill and surface grinder, including:

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  - clamping and mounting work pieces
  - setting speeds and feeds
  - machining ferrous and non-ferrous materials
- requirements of Australian standards relevant to engine reconditioning, including:
  - AS4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
  - AS4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the machining operations that they have carried out, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions detailing work requirements, including work specifications
- AS4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
- AS4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- machinery as specified in the performance evidence
- precision measuring equipment, including inside and outside metric and imperial micrometers
- ferrous and non-ferrous material relevant to carrying out machining operations.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTX001 Remove and tag driveline components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify, remove and tag a range of driveline components. It involves preparing for the work, removing and tagging driveline components by title, job number and driveline application, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation for entering the automotive retail, service and repair industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and tag driveline component	1.1 Task instructions are interpreted and vehicle to be worked on is identified 1.2 Driveline component information is sourced and interpreted 1.3 Potential hazards and risks associated with the task are identified and reported to workplace supervisor 1.4 Tools and equipment are selected and checked for serviceability
2. Remove component	2.1 Driveline component for removal is identified 2.2 Component is removed according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to components or systems 2.3 Removed component is inspected and findings are recorded according to workplace procedures
3. Tag component	3.1 Tagging procedures are identified 3.2 Removed component is legibly ***tagged*** according to workplace procedures and without causing damage 3.3 Tagged component is stored according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instructions and workplace standards 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate information.
Reading skills to:	• interpret key information from manufacturer specifications, workplace procedures and safety requirements relating to driveline components.
Writing skills to:	• legibly and accurately fill out workplace documentation, including tags, using correct industry terminology and conventions.
Numeracy skills to:	• interpret numerical information in task instructions and part numbers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with oils and fluids released from driveline systems • environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from driveline systems.
Tagged must include:	• component title • component condition • job number.

Unit Mapping Information

Equivalent to AURTTX1001 Remove and tag transmission system components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX001 Remove and tag driveline components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and tag one of the following driveline components by title and application:
  - manual transmission
  - automatic transmission
  - drive shaft
  - axles and axle housing.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and tagging driveline components, including procedures for working with oils and fluids released from driveline systems
- environmental requirements, including procedures for trapping, storing and disposing of oils and fluids released from driveline systems
- identification and basic function of the driveline components specified in the performance evidence
- driveline component removal procedures
- driveline component tagging and storage procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the driveline components that they have removed and tagged, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- driveline components specified in the performance evidence requiring removal and tagging
- tools, equipment and materials appropriate for removing and tagging driveline components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTX002 Inspect and service manual transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service manual transmissions. It involves preparing for the task, inspecting the transmission, reporting the inspection findings, servicing and adjusting the transmission, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The manual transmissions include those of agricultural machinery, heavy commercial vehicles, light vehicles, motorcycles, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service manual transmission	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect manual transmission	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service manual transmission	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to manual transmissions.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• calculate liquid volumes and service schedule intervals using basic mathematical operations, including addition and subtraction.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for handling transmission oils • environmental requirements, including procedures for trapping, storing and disposing of oils released from transmissions.

Unit Mapping Information

Equivalent to AURTTX2002 Inspect and service transmissions (manual)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX002 Inspect and service manual transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the manual transmissions of two different vehicle or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing manual transmissions, including procedures for handling transmission oils
- environmental requirements, including procedures for trapping, storing and disposing of oils released from transmissions
- identification and function of manual transmissions, including:
  - major components
  - gearshift mechanisms
- basic operation of manual transmissions, including:
  - transaxle
  - longitudinal transmission
  - transfer case
- types and applications of transmission oils
- inspection procedures for manual transmissions, including:
  - evaluating lubricant condition
  - carrying out visual inspections for damage or lubricant leaks
- service and adjustment procedures for manual transmissions, including:
  - replacing oils as required

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  - inspecting and adjusting lubricant levels
  - adjusting linkages as required
- post-service testing procedures for manual transmissions.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the manual transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer manual transmission specifications
- two different vehicles or machinery with manual transmissions requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing manual transmissions.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTX003 Inspect and service automatic transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service automatic transmissions. It involves preparing for the task, inspecting the transmission, reporting the inspection findings, servicing and adjusting the transmission, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The automatic transmissions include those of agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service automatic transmission	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect automatic transmission	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service automatic transmission	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to automatic transmissions.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• calculate liquid volumes and service schedule intervals using basic mathematical operations, including addition and subtraction.
Technology skills to:	• use automatic transmission servicing tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for handling transmission fluids • environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmissions.

Unit Mapping Information

Equivalent to AURTTX2003 Inspect and service transmissions (automatic)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX003 Inspect and service automatic transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the automatic transmissions of two different vehicles or machinery, including:
  - replacing transmission fluid and filter
  - making transmission adjustments.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing automatic transmissions, including procedures for handling transmission fluids
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from transmissions
- identification and function of automatic transmission components, including:
  - torque converter
  - control valve body
  - housings
  - gear trains
  - bands and clutch packs
  - servos
  - oil pumps
  - electronic controls
  - selector mechanisms

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- basic operation of automatic transmission, including:
  - torque converter
  - transaxle
  - longitudinal transmission
- types and applications of transmission fluids
- inspection procedures for automatic transmissions, including:
  - fluid levels and condition
  - fluid leaks
  - internal and external physical condition
  - transmission sensors and controls
- service and adjustment procedures for automatic transmissions, including:
  - replacing transmission fluid and filter
  - checking transmission fluid levels
  - adjusting bands, linkages and sensors as required
- post-service testing procedures for automatic transmissions.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the automatic transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer automatic transmission specifications
- two different vehicles or machinery with automatic transmissions requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing automatic transmissions.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTX004 Inspect and service hydrostatic transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service hydrostatic transmissions and associated components. It involves preparing for the task, inspecting the transmission and components, reporting the inspection findings, servicing and adjusting the transmission, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The hydrostatic transmissions include those of agricultural machinery, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service hydrostatic transmission	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect hydrostatic transmission	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service hydrostatic transmission	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to hydrostatic transmissions.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use mathematical operations, including addition and subtraction, to determine liquid quantities • interpret pressure gauges and units of pressure.
Problem solving skills to:	• refer problems outside area of responsibility to appropriate person.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with high oil pressures
	  • working with stored hydraulic accumulator pressures
	  • isolating and stabilising machinery
	• environmental requirements, including procedures for trapping, storing and disposing of oil released from hydrostatic transmissions.

Unit Mapping Information

Equivalent to AURTTX2004 Service transmissions (hydrostatic)

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX004 Inspect and service hydrostatic transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service the hydrostatic transmissions of two different machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing hydrostatic transmissions, including procedures for:
  - working with high oil pressures
  - working with stored hydraulic accumulator pressures
  - isolating and stabilising machinery
- environmental requirements, including procedures for trapping, storing and disposing of oil released from hydrostatic transmissions
- identification, function and basic operation of hydrostatic transmission and components, including:
  - charge pump
  - main pump
  - drive motor
  - filters
  - hydraulic lines
  - heat exchanger
  - reservoir
  - control valve
- types and applications of hydraulic oil

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- inspection procedures for hydrostatic transmissions, including:
  - hydraulic oil sampling
  - oil leaks
  - pressure checks as required
- service and adjustment procedures for hydrostatic transmissions, including
  - adjusting or replenishing oil level as required
  - replacing filters as required
- post-service testing procedures for hydrostatic transmissions.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the hydrostatic transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer hydrostatic transmission specifications
- two different machinery with hydrostatic transmissions requiring servicing
- tools, equipment and materials appropriate for inspecting and servicing hydrostatic transmissions.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTX006 Diagnose and repair hydrostatic transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in hydrostatic transmissions and their associated components. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The unit applies to hydrostatic transmissions in agricultural machinery, mobile plant machinery or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair hydrostatic transmission	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose hydrostatic transmission	2.1 ***Diagnostic tests*** are carried out according to workplace procedures, ***safety and environmental requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings, including recommendations for necessary repairs or adjustments, are reported according to workplace procedures
3. Repair hydrostatic transmission	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or system 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking hydrostatic transmission specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure hydrostatic transmission components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distance, volume, pressure, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use hydrostatic transmission diagnostic equipment and measuring equipment, such as vernier calipers and micrometers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Diagnostic tests must include:	• using pressure gauges and flow meters to diagnose hydrostatic transmissions, including taking pressure readings of the following systems:
	  • charge
	  • pilot
	  • hot oil

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	• main hydrostatic loop.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • working with high pressure and stored energy hazards
	  • isolating and stabilising machines
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from hydrostatic transmissions.

Unit Mapping Information

Equivalent to AURTTX3006 Repair transmissions (hydrostatic)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX006 Diagnose and repair hydrostatic transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in the hydrostatic transmission systems of two different vehicles or machinery, including in three of the following components:
  - charge pump
  - main pump
  - drive motor
  - hydraulic lines
  - heat exchanger
  - control valve.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing hydrostatic transmissions, including procedures for:
  - working with high pressure and stored energy hazards
  - isolating and stabilising machines
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from hydrostatic transmissions
- operating principles of hydrostatic transmissions and associated components, including:
  - closed loop
  - charge circuitry
  - flushing circuit

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- application, purpose and operation of hydrostatic transmissions and components, including:
  - charge pump
  - main pump, including pilot control systems
  - drive motor, including control systems
  - filtering
  - hydraulic lines
  - heat exchanger
  - reservoir
- diagnostic testing procedures for hydrostatic transmissions, including:
  - testing charging system
  - testing closed loop system
  - testing flushing system
  - measuring case drains
  - testing internal and external fluid leaks
  - checking abnormal noises and operation
  - using scan tools and multimeter
- repair procedures for hydrostatic transmissions, including procedures for:
  - isolating faults
  - dismantling components and parts
  - inspecting and evaluating worn components
  - repairing and replacing parts
- post-repair flow and pressure testing procedures for hydrostatic transmissions.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the hydrostatic transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer specifications for hydrostatic transmissions
- two different vehicles or machinery with faults in the hydrostatic transmission components specified in the performance evidence
- diagnostic equipment for hydrostatic transmissions
- tools, equipment and materials appropriate for repairing and adjusting hydrostatic transmissions.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTX007 Overhaul clutch assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return a clutch assembly to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the clutch assembly, carrying out the overhaul procedures, reassembling and testing the clutch assembly, and completing workplace processes and documentation.

It applies to those working on clutch assemblies in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle clutch assembly	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate clutch assembly and components	2.1 Clutch assembly is dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble clutch assembly and components	4.1 Clutch assembly is assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of clutch assembly is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly process are rectified

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and clutch assembly is presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for clutch assemblies efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking clutch assembly specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure clutch assembly components, and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as micrometers and dial

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Skills	Description
	bore gauges • use specialised clutch assembly overhaul equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • trapping, storing and disposing of brake dust and brake fluids
	  • using specialised clutch assembly overhaul tools, equipment and machinery
	  • using chemicals and toxic cleaning substances
	• environmental requirements, including procedures for trapping, storing and disposing of fluids and dust released from clutch assemblies.

Unit Mapping Information

Equivalent to AURTTX4007 Overhaul clutch assemblies

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX007 Overhaul clutch assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul three different clutch assemblies, including one of the following:
  - diaphragm clutch
  - coil spring clutch
  - dual mass flywheel.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling clutch assemblies, including procedures for:
  - trapping, storing and disposing of brake dust and brake fluids
  - using specialised clutch assembly overhaul tools, equipment and machinery
  - using chemicals and toxic cleaning substances
- environmental requirements, including procedures for trapping, storing and disposing of fluids and dust released from clutch assemblies
- types, characteristics and operating principles of clutch assemblies, including:
  - diaphragm clutches
  - coil spring clutches
  - multi-plate wet clutches
  - dual mass flywheels
  - dog clutches
  - clutch operating systems, including:

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    - cable systems
    - hydraulic systems
- clutch assembly overhaul procedures, including:
    - methods for removing clutch assemblies from flywheels
    - methods for cleaning and preparing clutch assemblies for overhaul
    - clutch dismantling procedures, including:
        - diaphragm clutches
        - coil spring clutches
    - clutch component inspection, measuring and evaluation procedures, including:
        - non-destructive testing procedures, including dye penetrant testing and magnetic particle testing
        - flywheel, including surface damage and run-out, ring gear serviceability, and pilot bearing serviceability
        - pressure plate assembly, including pressure plate surface damage, pressure plate surface run-out and warping, diaphragm spring serviceability, coil spring and associated components serviceability, and clutch cover damage
        - friction disc serviceability
        - release bearing serviceability
        - crankshaft, including pilot bearing bore run-out and crankshaft end float
        - clutch release fork and transmission input shaft inspection
    - clutch repair and adjustment procedures, including flywheel and pressure plate machining
    - clutch assembly procedures, including procedures for adjusting component tolerances and clearances
- post-overhaul testing procedures for clutch assemblies.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the clutch assemblies that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer clutch assembly specifications
- three different clutch assemblies requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting clutch assemblies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTX008 Overhaul manual transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return a manual transmission to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the transmission, carrying out the overhaul procedures, reassembling and testing the transmission, and completing workplace processes and documentation.

It applies to those working on manual transmissions in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle manual transmission	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate manual transmission and components	2.1 Transmission is dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble transmission and components	4.1 Transmission is assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of transmission is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace procedures and safety and environmental requirements, and any

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and transmission is presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for manual transmissions efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking manual transmission specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure manual transmission components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer

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Skills	Description
	specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Technology skills to:	• use precision measuring equipment, such as vernier calipers and micrometers
	• use specialised manual transmission overhaul equipment, such as:
	  • dummy shafts
	  • bearing pullers and presses.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for using:
	  • specialised manual transmission overhaul tools, equipment and machinery
	  • chemicals and toxic substances
	  • manual and mechanical lifting equipment
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from manual transmissions.

Unit Mapping Information

Equivalent to AURTTX4008 Overhaul transmissions (manual)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX008 Overhaul manual transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul three different manual transmissions, one of which must include a transaxle transmission.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling manual transmissions, including procedures for using:
  - specialised manual transmission overhaul tools, equipment and machinery
  - chemicals and toxic substances
  - manual and mechanical lifting equipment
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from manual transmissions
- types, characteristics and operating principles of manual transmissions, including transaxles and conventional transmissions
- manual transmission overhaul procedures, including:
  - methods for cleaning and preparing manual transmissions for overhaul
  - transmission dismantling procedures
  - transmission component inspection, measuring and evaluation procedures, including:
    - non-destructive testing procedures, including dye penetrant testing and magnetic particle testing
    - assessing transmission case damage and alignment to engine

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        - measuring tolerances and clearances of components, including extension housing seal and bushing, bearings, gear wear and damage, synchroniser units and baulk rings, shift rails and forks, detents and interlock systems, and input, main, counter and output shafts
    - transmission component repair and adjustment procedures, including:
        - bearings and shims
        - seals and bushings
        - speedometer drive gears
    - transmission assembly procedures, including procedures for adjusting component tolerances, including:
        - bearing preload
        - shaft end float
        - final drive bearing preload
- post-overhaul testing procedures for manual transmissions.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the manual transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer manual transmission specifications
- three different manual transmissions requiring overhaul, one of which must be a transaxle
- tools, equipment and materials appropriate for overhauling and adjusting manual transmissions.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTX009 Overhaul automatic transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return an automatic transmission to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the transmission, carrying out the overhaul process, reassembling and testing the transmission, and completing workplace processes and documentation.

It applies to those working on automatic transmissions in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle automatic transmission	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate automatic transmission and components	2.1 Transmission is dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble transmission and components	4.1 Transmission is assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of transmission is completed within workplace timeframes and without causing damage to other components or systems 4.5 Post-assembly testing is carried out according to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and transmission is presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for automatic transmissions efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking automatic transmission specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure automatic transmission components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.

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Skills	Description
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers and micrometers • use specialised automatic transmission overhaul equipment, such as bearing pullers and presses.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for using:
	  • specialised automatic transmission overhaul tools, equipment and machinery
	  • chemicals and toxic substances
	  • automatic and mechanical lifting equipment
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from automatic transmissions.

Unit Mapping Information

Equivalent to AURTTX4009 Overhaul transmissions (automatic)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX009 Overhaul automatic transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul three different automatic transmissions, one of which must be a transaxle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling automatic transmissions, including procedures for using:
  - specialised automatic transmission overhaul tools, equipment and machinery
  - chemicals and toxic substances
  - automatic and mechanical lifting equipment
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from automatic transmissions
- types, characteristics and operating principles of automatic transmissions, including transaxles and conventional transmissions
- automatic transmission overhaul procedures, including:
  - methods for cleaning and preparing automatic transmissions for overhaul
  - transmission dismantling procedures
  - transmission component inspection, measuring and evaluation procedures, including:
    - non-destructive testing procedures, including dye penetrant testing and magnetic particle testing
    - transmission case damage and alignment to engine

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    - measuring tolerances and clearances of components, including gear train wear and damage, clutch packs, brake bands, oil pumps, valve body and associated components, extension housing seal and bushing, and bearings
    - methods for evaluating electronic actuators, including solenoids
    - transmission component repair and adjustment procedures, including component machining procedures
  - transmission assembly procedures, including procedures for measuring and adjusting component tolerances, including:
    - clutch packs
    - brake bands and servos
    - gear train preloads and end floats
    - final drive bearing preload
- post-overhaul testing procedures for automatic transmissions.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the automatic transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer automatic transmission specifications
- three different automatic transmissions requiring overhaul, one of which must be a transaxle
- tools, equipment and materials appropriate for overhauling and adjusting automatic transmissions.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTX010 Overhaul hydrostatic transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return a hydrostatic transmission to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the transmission, carrying out the overhaul procedures, reassembling and testing the transmission, and completing workplace processes and documentation.

It applies to those working on hydrostatic transmissions in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle hydrostatic transmission	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted 1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate hydrostatic transmission and components	2.1 Transmission is dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked according for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble transmission and components	4.1 Transmission is assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of transmission is completed within workplace timeframes and without causing damage to other components or systems

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	4.4 Post-assembly testing is carried out according to workplace procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and transmission is presented ready for use or storage 5.2 k area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for hydrostatic transmissions efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking hydrostatic transmission specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure hydrostatic transmission components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer

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Skills	Description
	specifications.
Planning and Organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers and micrometers • use specialised hydrostatic transmission overhaul equipment, such as pressure gauges.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for using:
	  • specialised hydrostatic transmission overhaul tools, equipment and machinery
	  • chemicals and toxic substances
	  • manual and mechanical lifting equipment
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from hydrostatic transmissions.

Unit Mapping Information

Equivalent to AURTTX4010 Overhaul transmissions (hydrostatic)

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX010 Overhaul hydrostatic transmissions

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul three different hydrostatic transmissions.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling hydrostatic transmissions, including procedures for using:
  - specialised hydrostatic transmission overhaul tools, equipment and machinery
  - chemicals and toxic substances
  - manual and mechanical lifting equipment
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from hydrostatic transmissions
- types, characteristics and operating principles of hydrostatic transmissions
- hydrostatic transmission overhaul procedures, including:
  - methods for cleaning and preparing hydrostatic transmissions for overhaul
  - transmission dismantling procedures
  - transmission component inspection, measuring and evaluation procedures, including:
    - transmission case damage
    - measuring tolerances and clearances of components
  - transmission component repair and adjustment procedures, including procedures for removing and replacing components
  - transmission assembly procedures, including procedures for adjusting component tolerances

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- post-overhaul testing procedures for hydrostatic transmissions.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the hydrostatic transmissions that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer hydrostatic transmission specifications
- three different hydrostatic transmissions requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting hydrostatic transmissions.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTX011 Overhaul torque converters

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to return a torque converter to original manufacturer tolerances and clearances. It involves preparing for the task, dismantling and evaluating the torque converter, carrying out the overhaul procedures, reassembling and testing the torque converter, and completing workplace processes and documentation.

It applies to those working on torque converters in vehicles from all sectors of the industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to dismantle torque converter	1.1 Job requirements are determined from workplace instructions 1.2 Dismantling information is sourced and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Dismantling options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Dismantling tools and equipment are selected and checked for serviceability
2. Dismantle and evaluate torque converter and components	2.1 Torque converter is dismantled in a logical sequence according to manufacturer and workplace procedures, and ***safety and environmental requirements***, and without causing unnecessary damage to components or systems 2.2 Components are cleaned for evaluation according to workplace procedures and safety and environmental requirements 2.3 Components are measured and compared with manufacturer specifications and serviceability is determined 2.4 Component repair method is determined 2.5 Unserviceable parts are identified and replacement parts sourced
3. Carry out overhaul	3.1 Overhaul information is sourced and interpreted 3.2 Overhaul options are analysed and those most appropriate to the circumstances are selected 3.3 Overhaul tools and equipment are selected and checked for serviceability 3.4 Components are machined, repaired and replaced as required, and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or systems
4. Assemble torque converter and components	4.1 Torque converter is assembled according to manufacturer specifications, workplace procedures, and safety and environmental requirements 4.2 Tolerances and clearances are measured against manufacturer specifications and necessary adjustments are made 4.3 Assembly of torque converter is completed within workplace timeframes and without causing damage to other components or systems 4.4 Post-assembly testing is carried out according to workplace procedures and safety and environmental requirements, and any problems detected as having been introduced during the assembly process are rectified

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and torque converter is presented ready for use or storage 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate sources of information for torque converters efficiently.
Reading skills to:	• interpret and assess information from manufacturer and workshop literature when seeking torque converter specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions, report evaluation findings and make overhaul recommendations.
Numeracy skills to:	• measure torque converter components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use precision measuring equipment, such as vernier calipers and

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Skills	Description
	micrometers • use specialised torque converter overhaul equipment, such as lathes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for using:
	  • specialised torque converter overhaul tools, equipment and machinery
	  • chemicals and toxic substances
	  • manual and mechanical lifting equipment
	• environmental requirements, including procedures for trapping, storing and disposing of fluids released from torque converters.

Unit Mapping Information

Equivalent to AURTTX4011 Overhaul torque converters

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX011 Overhaul torque converters

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- overhaul three different torque converters.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to overhauling torque converters, including procedures for using:
  - specialised torque converter overhaul tools, equipment and machinery
  - chemicals and toxic substances
  - manual and mechanical lifting equipment
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from torque converters
- types, characteristics and operating principles of torque converters
- torque converter overhaul procedures, including:
  - methods for cleaning and preparing torque converters for overhaul
  - torque converter dismantling procedures
  - torque converter component inspection, measuring and evaluation procedures, including:
    - torque converter case damage
    - measuring tolerances and clearances of components
  - torque converter component repair and adjustment procedures, including procedures for removing and replacing components

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  - torque converter assembly procedures, including procedures for adjusting component tolerances
- post-overhaul testing procedures for torque converters.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the torque converters that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- mechanical repair workplace or simulated workplace
- workplace instructions
- manufacturer torque converter specifications
- three different torque converters requiring overhaul
- tools, equipment and materials appropriate for overhauling and adjusting torque converters.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTX012 Dismantle and assemble conventional manual transmissions

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to dismantle and reassemble a conventional manual transmission. It requires the learner to plan and prepare the task; dismantle the transmission and inspect the components; reassemble the transmission and check the transmission operation; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to dismantle and	1.1 ***Safety and environmental requirements*** are sourced and

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ELEMENTS	PERFORMANCE CRITERIA
assemble conventional manual transmission	interpreted 1.2 Task instruction is interpreted and transmission to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for conventional manual transmission dismantle and assembly are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 ***Tools and equipment*** required for conventional manual transmission dismantle and reassembly are identified according to manufacturer specifications
2. Dismantle a conventional manual transmission	2.1 Tools, equipment and materials are selected and checked prior to use according to manufacturer specifications and safety requirements 2.2 ***Manual transmission*** is dismantled according to workplace procedures and safety and environmental requirements, and without causing damage to components, tools or equipment 2.3 Transmission components are cleaned and arranged for identification according to workplace procedures
3. Inspect and identify gears and bearings	3.1 Measuring equipment and tools are selected and checked according to manufacturer specifications and workplace safety procedures 3.2 Gears and bearings are inspected and measured, and measurements are compared against manufacturer specifications 3.3 Transmission bearing information is sourced and interpreted, and bearing type and associated loads are identified 3.4 Gear types are identified and gear ratios calculated and recorded
4. Inspect components and re-assemble transmission	4.1 Transmission seals, sealants and gasket information is sourced and interpreted; and seals, sealants and gaskets are identified 4.2 Transmission component's inspection results are recorded 4.3 Transmission components are prepared for assembly according to manufacturer specifications and safety and environmental requirements 4.4 Transmission is assembled according to manufacturer specifications and requirements
5. Complete work processes	5.1 Final inspection is made to ensure work meets task instruction and workplace standards, and conventional manual transmission is presented ready for use or storage according to workplace procedures 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored

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ELEMENTS	PERFORMANCE CRITERIA
	according to environmental requirements and workplace procedures 5.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of vehicle transmission information and transmission dismantle and reassembly procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely dismantle and assemble a conventional manual transmission • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• read and interpret numerical information in transmission information • use specialist tools and measuring equipment correctly, including verniers, micrometers and torque wrenches, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters) • use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate clearances and ratios.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes.

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Skills	Description
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.
Technology skills to:	• set up and operate equipment and tools required to dismantle and assemble a conventional manual transmission.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including:
	  • use of personal protective equipment, including safety glasses, ear protection and safety footwear
	  • applying procedures for disposing of used oil, lubricants and coolants.

Tools and equipment must include:	• micrometers and other measurement instruments • torque wrench.
Manual transmission must include:	• a complete conventional manual transmission, with at least four gears.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX012 Dismantle and assemble conventional manual transmissions

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- dismantle and re-assemble a minimum of two different conventional manual transmissions.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - procedures for disposing of used oil and lubricants
- types of manual transmissions, including:
  - conventional
  - transaxle
- transmission operating principles, including:
  - types of gears
  - gear ratios
  - transmission bearings, seals and gaskets
  - transmission oils
- construction and operation of transmissions, including:
  - power flows
  - gear selector mechanisms and interlocks
  - synchromesh units
- transmission dismantling procedures
- transmission inspection procedures

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- transmission reassembly procedures
- work area clean-up and maintenance requirements.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to dismantling and re-assembling a conventional manual transmission e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- two different conventional manual transmissions with at least four gears
- tools and special equipment, including lifting equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTX013 Remove and replace clutch assemblies

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to remove and replace the clutch assembly of a vehicle. It requires the learner to plan and prepare the task; remove the clutch assembly and inspect it and its associated components; replace the clutch assembly and check the clutch operation; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Transmission

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to remove and replace clutch assembly	1.1 ***Safety and environmental requirements*** are sourced and interpreted

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ELEMENTS	PERFORMANCE CRITERIA
	1.2 Task instruction is interpreted and clutch assembly to be worked on is identified 1.3 Manufacturer specifications and workplace procedures for clutch assembly removal and replacement are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 Tools and equipment required for removing and replacing clutch assembly are identified according to manufacturer specifications
2. Remove clutch assembly	2.1 ***Tools, equipment and materials*** are selected and checked prior to use according to manufacturer specifications and safety requirements 2.2 ***Clutch assembly*** is removed according to workplace procedures and safety and environmental requirements, and without causing damage to components, tools or equipment 2.3 Clutch components are identified and inspected according to manufacturer specifications 2.4 Clutch assembly component inspection results are recorded
3. Replace clutch assembly	3.1 Clutch assembly components are prepared for assembly 3.2 Clutch is replaced according to safety and environmental requirements, workplace procedures and manufacturer specifications, and without causing damage to components, tools or equipment 3.3 Clutch assembly finger height is measured and compared to manufacturer specifications
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instruction and workplace standards, and clutch assembly is presented ready for use or storage according to workplace procedures 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 4.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of vehicle clutch assembly information and clutch assembly removal and replacement procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to safely remove and replace clutch assemblies • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• read and interpret numerical information in clutch system information • use specialist tools and measuring equipment correctly, including verniers and torque wrenches, and report and record the results correctly using relevant mathematical symbols and conventions (e.g. mm for millimeters) • use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate length and clearances.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes.
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.
Technology skills to:	• set up and operate equipment and tools required to remove and replace a clutch assembly.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Safety and environmental requirements must include:	• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
	  • use of personal protective equipment, including safety glasses, ear protection and safety footwear
	  • use of hand tools and lifting equipment
	  • application of procedures for handling used transmission fluid and asbestos-based products, including brake dust.

Tools, equipment and materials must include:	• automotive hand tools • transmission lifting equipment • clutch aligning tool • cleaning agents.

Clutch assembly must include:	• the complete clutch assembly from one of the following:
	  • passenger or light commercial motor vehicle
	  • heavy vehicle
	  • motorcycle
	  • constructed vehicle.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX013 Remove and replace clutch assemblies

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly remove and replace a clutch assembly from an operating vehicle with a manual transmission.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS)and environmental requirements, including:
  - use of personal protective equipment, including safety glasses, ear protection and safety footwear
  - use of hand tools and lifting equipment
  - safety data sheets (SDS) and procedures for handling and disposing of waste brake fluid, lubricants and asbestos-based products, including brake dust
- clutch assembly types, application and basic operation, including:
  - diaphragm clutch
  - coil spring clutch
- clutch assembly removal procedures
- clutch assembly and associated component inspection procedures
- clutch assembly replacement procedures, including:
  - clutch aligning
  - clutch finger height measurement
- work area clean-up and maintenance requirements.

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Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the clutch assemblies that they have removed and replaced, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- an appropriate vehicle fitted with a manual transmission and clutch assembly
- automotive hand tools
- transmission lifting machine
- clutch aligning tool
- cleaning agents.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTX015 Inspect and service clutch systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to inspect and service clutch systems. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

This unit applies to those working in the automotive service and repair industry. The clutch systems include those of agricultural machinery, heavy commercial vehicles, light vehicles, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical - Transmission

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare to inspect and service clutch system	1.1 Identify job requirements from workplace instructions 1.2 Obtain and interpret servicing information 1.3 Identify hazards and environmental issues, assess potential risks and implement control measures in line with workplace policies 1.4 Identify tools, equipment and materials required for the job, and examine for serviceability
2. Inspect clutch system	2.1 Carry out inspection according to manufacturer specifications, workplace procedures and workplace health and safety and

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	environmental requirements 2.2 Compare inspection results with manufacturer specifications 2.3 Report inspection findings and make recommendations for necessary repairs or adjustments according to workplace procedures
3. Service clutch system	3.1 Carry out service and adjustment activities according to manufacturer specifications, workplace procedures, workplace health and safety and environmental requirements, and without causing damage to components or systems 3.2 Carry out post-service testing according to workplace procedures and rectify any issues identified
4. Complete work processes	4.1 Carry out final inspection to ensure work meets workplace expectations and vehicle or machinery is ready for use 4.2 Clear work area and dispose of or recycle materials according to workplace procedures 4.3 Examine and store tools and equipment according to workplace procedures 4.4 Complete workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of clutch systems information efficiently
Reading skills to:	• read and interpret information from manufacturer specifications, workplace procedures and documentation ,when seeking clutch systems service procedures and specifications
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making repair recommendations, and recording parts and material used
Oral communication skills to:	• clarify instructions • report inspection findings • make repair recommendations
Numeracy skills to:	• use mathematical operations, including addition and subtraction • measure clutch system components • compare measurements against specifications

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Problem solving skills to:	• refer problems outside area of responsibility to relevant person

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURTTX015 Inspect and service clutch systems (Release 1)	AURTTX005 Inspect and service clutch systems (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Removal of reference to OHS requirements. Removal of range of conditions. Addition of assessor requirements.	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTX015 Inspect and service clutch systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate inspecting and servicing the clutch systems of two different vehicles or machinery, including:

- one mechanically operated clutch system
- one hydraulically operated clutch system
-

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures for the inspection and service of clutch, including:

- how to locate and interpret manufacturer specifications or equivalent documentation and workplace procedures for inspecting and servicing clutch systems
- the following workplace health and safety requirements for inspecting and servicing clutch systems:
  - procedures for controlling clutch dust and clutch fluid hazards
- the following environmental requirements and procedures for inspecting and servicing clutch systems:
  - trapping, storing and disposing of clutch fluid released during clutch bleeding
- the following inspection procedures for clutch systems:
  - mechanically or cable operated clutch component wear
  - hydraulic operating system for leaks
- service and adjustment procedures for clutch systems, including:
  - adjusting clutch pedal
  - adjusting release fork
  - bleeding clutch fluid
- post-service testing procedures for clutch systems

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- workplace housekeeping and documentation procedures

Clutch systems technical information including:

- the identification, function and operation of the following clutch system and components:
  - clutch plate
  - pressure plate
  - flywheel
  - release bearing and release fork
  - pedals and cables
  - master cylinder
  - slave cylinder
- basic operation of the following clutch systems:
  - dry single or multi-plate clutch
  - wet multi-plate clutch
  - centrifugal clutch
  - hydraulically operated clutch
  - mechanically or cable operated clutch
- types and applications of clutch fluids
-

Assessment Conditions

The assessment must:

- include access to:
  - an automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to inspect and service activity
  - workplace procedures relating to inspect and service activity
  - manufacturer clutch system specifications or equivalent documentation to complete inspect and service activity
  - two different vehicles or machinery with clutch systems requiring servicing
  - tools, equipment and materials suitable for inspecting and servicing clutch systems
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances

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Assessor Requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards
-

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTY001 Repair vehicle chassis, frame and associated components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect, repair and align chassis, frame and components to vehicles. It involves preparing for the task, selecting and using specialist tools and equipment, identifying damage, taking pre-repair measurements, conducting repairs, taking post-repair measurements according to original equipment manufacturer (OEM) or authorised agency specifications, and completing workplace processes and documentation.

It applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Chassis and Frame

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to repair vehicle chassis, frame and associated components	1.1 Job requirements are determined from workplace instructions 1.2 Type of damage is identified, and inspection report is completed and documented according to workplace procedures 1.3 Repair specifications from OEM or authorised agency are sourced and interpreted 1.4 Hazards associated with the work are identified and risks are managed 1.5 ***Repair tools and equipment*** and personal protective equipment (PPE) are selected and checked for serviceability 1.6 Work is planned to identify repair methods, minimise waste and use time efficiently
2. Carry out repairs	2.1 Repair or replacement and alignment activities are carried out according to OEM or authorised agency repair specifications, workplace procedures, and ***safety and environmental requirements***, within industry time lines, and without causing damage to other vehicle components or systems 2.2 Measuring equipment is used to take accurate measurements and to align the chassis, frame and components
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communications skills to:	• ask questions to clarify instructions and procedures • clearly report issues or outcomes relating to repair.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate tolerances from manufacturer specifications • interpret repair and alignment measurements.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• correctly and safely use specialist repair equipment and tools.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Repair tools and equipment must include:	• hydraulic repair equipment • measuring and alignment equipment.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	  • identifying workplace hazards
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURTTY3001 Repair chassis, frame and associated components

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTY001 Repair vehicle chassis, frame and associated components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- repair one chassis and its frame and components, in which the work must involve two of the following types of damage:
  - diamond and twist damage
  - kick-up and kick-down
  - sag
  - mash and sway.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing vehicle chassis, frame and associated components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
  - identifying workplace hazards
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- steps in repair inspection process
- original equipment manufacturer (OEM) or authorised agency specifications and recommended repair procedures
- features of different types of chassis damage, including:
  - diamond and twist damage

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  - kick-up and kick-down
  - sag
  - mash and sway
- procedures for determining chassis reparability
- vehicle design characteristics, including:
  - mono unitised
  - alloy and high strength steel (HSS) chassis
- chassis repair, replacement and alignment techniques
- key characteristics of welding types and techniques
- limitations on drilling and welding to chassis
- type and use of chassis repair tools and equipment, including:
  - application of heat colours, heat crayons and thermal temp gun
  - hydraulic repair equipment
  - equipment maintenance procedures
- measuring and alignment procedures
- type and use of measuring equipment, including:
  - gun sight gauges
  - drop lining
  - trammel gauges
  - tape measures
- final inspection procedures
- work area clean-up and maintenance requirements
- procedures for completing workplace documentation.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle chassis, frames and components that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- OEM specifications and repair instructions
- PPE required to repair chassis, frame and components
- one chassis requiring repair, and its frame and associated components
- measuring and alignment equipment
- tools and equipment appropriate for repairing vehicle chassis, frame and components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTZ001 Inspect and service emission control systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and service emission control systems on petrol or diesel powered engines. It involves preparing for the task, inspecting the system, reporting the inspection findings, servicing and adjusting the system, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The emission control systems include those of agricultural equipment, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

This unit does not include emission control systems associated with engine management systems.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical - Emission and Exhaust

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to inspect and service emission control system	1.1 Job requirements are determined from workplace instructions 1.2 Servicing information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Inspect emission control system	2.1 Inspection is carried out according to manufacturer specifications, workplace procedures and ***safety requirements*** 2.2 Inspection results are compared with manufacturer specifications 2.3 Inspection findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Service emission control system	3.1 Service and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking service procedures and specifications relating to emission control systems.
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Problem solving skills to:	• refer problems outside area of responsibility to appropriate person.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with vehicles and machinery that produce toxic exhaust gas.

Unit Mapping Information

Equivalent to AURTTZ2001 Inspect and service emission control systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTZ001 Inspect and service emission control systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service two different vehicle or machinery emission control systems on petrol or diesel powered engines.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting and servicing emission control systems, including procedures for working with vehicles and machinery that produce toxic exhaust gas
- basic principles of emission control, including:
  - types of vehicle emissions and their effects on the environment
  - sources of emissions from petrol and diesel vehicles and machinery, including:
    - fuel system
    - engine crankcase
    - engine exhaust system
- identification and function of emission control systems, including:
  - fuel evaporative control systems, including:
    - fuel tank and cap
    - charcoal canister
  - crankcase ventilation systems
  - exhaust emission control systems, including:
    - particulate filters
    - catalytic converters

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  - exhaust gas recirculation (EGR) systems
  - supplementary catalytic reduction (SCR) systems
- inspection procedures for emission control systems, including:
  - identifying deterioration and damage of components
  - checking for fuel or exhaust gas leaks
- service and adjustment procedures for emission control systems, including cleaning or replacing components as required
- post-service testing procedures for emission control systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the emission control systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer emission control system specifications
- two different vehicles or machinery with emission control systems requiring servicing
- equipment, tools and materials appropriate for inspecting and servicing emission control systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURTTZ002 Diagnose and repair exhaust systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the exhaust systems of vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The unit applies to exhaust systems in agricultural machinery, heavy commercial vehicles, light vehicles, marine vessels, mobile plant machinery, motorcycles or outdoor power equipment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical – Emission and Exhaust

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential outcomes**.**	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**

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Elements Elements describe the essential outcomes**.**	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section**.**
1. Prepare to diagnose and repair an exhaust system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose an exhaust system	2.1 Diagnostic tests are performed according to workplace procedures and ***safety requirements*** 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Repair an exhaust system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or system 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and system or vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret information from manufacturer and workshop literature when seeking exhaust system specifications and procedures.
Writing skills to:	• legibly and accurately fill out workplace literature when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report diagnostic findings and make repair recommendations.
Numeracy skills to:	• measure exhaust system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• diagnostic equipment for exhaust systems

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with hot components and exhaust systems producing toxic gases.

Unit Mapping Information

Equivalent to AURTTZ2002 Repair exhaust system components

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURTTZ002 Diagnose and repair exhaust systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in two of the following components in the exhaust systems of two different vehicles:
  - exhaust manifold or extractor pipes
  - manifold gasket fitted to a vehicle
  - catalytic converter
  - muffler or resonator
  - exhaust pipe.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing exhaust systems, including procedures for working with hot components and exhaust systems producing toxic gases
- operating principles of features of exhaust systems and associated components, including scavenging and back pressure
- application, purpose and operation of exhaust systems and components, including:
  - mufflers
  - extractor pipes
  - catalytic converters
  - diesel particulate filters
- diagnostic testing procedures for exhaust systems, including:
  - exhaust leak testing

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  - vibration and noise locating procedures
  - back pressure testing
- repair procedures for exhaust systems, including procedures for removing, replacing and aligning components
- post-repair testing procedures for exhaust systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the exhaust systems that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer exhaust system specifications
- two different vehicles with faults in the exhaust system components specified in the performance evidence
- diagnostic equipment for exhaust systems
- tools, equipment and materials appropriate for repairing exhaust systems, including metal heating equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVLA001 Identify and report vehicle claim fraud indicators

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to identify and report fraud indicators associated with a vehicle insurance claim.

The unit applies to those who identify signs of fraudulent activity on inspection of vehicles; collecting and evaluating information, and providing a written assessment report. Work may relate to light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Vehicle Body

Unit Sector

Regulatory and Legal

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare for vehicle assessment	1.1 ***Assessment information*** is gathered 1.2 Assessment information is reviewed and interpreted 1.3 ***Safety requirements*** relating to vehicle claim fraud indicators are identified
2. Inspect the vehicle for	2.1 ***Fraud indicators*** are identified and recorded

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ELEMENTS	PERFORMANCE CRITERIA
fraud	2.2 ***Workplace policies and procedures***, ***industry guidelines*** and ***legal requirements*** are read and interpreted 2.3 Vehicle is assessed in line with compliance requirements
3. Determine suitable action	3.3 Possible actions to deal with fraud indicators are determined 3.2 Action consistent with nature of claim, assessment made, and workplace and legal restraints is decided
4. Prepare assessment report	4.1 Comprehensive report is prepared specifying full results of identified fraud and vehicle assessment 4.2 Recommendations are documented, including actions and justifications 4.3 Report is submitted and filed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	• interpret information relating to automotive insurance claims and assessment information.
Writing skills to:	• write a comprehensive assessment report integrating information from a range of sources and using appropriate support material, such as photographs and measurements.
Oral communication skills to:	• gather and interpret information from customers and others relating to a fraudulent vehicle insurance claim.
Numeracy skills to:	• use calculations of actual damage when reviewing vehicle claims to identify and report vehicle claim fraud indicators.
Problem-solving skills to:	• establish diagnostic processes relating to identifying and reporting vehicle claim fraud indicators.
Teamwork skills to:	• work effectively with customers, repairers and supervisors.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Assessment information must include:	• assessment notification detailing:
	  • claims handler
	  • insurance policy details where applicable
	  • vehicle owner details
	  • vehicle details
	  • driver details
	  • incident details
	  • vehicle inspection details, including assess without prejudice or assess and authorise
	• digital images
	• quote for repairs or total loss determination.

Safety requirements must include:	• first aid equipment • personal protective equipment and clothing • safety equipment.
Fraud indicators must include two of the following:	• claim report inconsistent with vehicle damage • manufactured damage • staged accidents.
Workplace policies and procedures must include:	• recording and reporting procedures • safe work procedures.
Industry guidelines must include:	• instructions issued by authorised organisation or external persons • industry codes of practice • verbal, written and graphical instructions.
Legal requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and must include:	• commercial-in-confidence practices • Competition and Consumer Act • confidentiality and privacy • Motor Vehicle Insurance and Repair Industry Code of Conduct • personal legal liability • relevant industry codes of practice • Written-Off Vehicles Register (WOVR) managed by each State and Territory.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVLA001 Identify and report vehicle claim fraud indicators

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- assess vehicles to identify and report indicators of vehicle claim fraud, including a minimum of two of the following:
  - staged vehicle accidents
  - manufactured damage
  - damage inconsistent to claim report
- complete an assessment report relating to each claim.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- principles of fraud investigation
- procedures for identifying and reporting fraud indicators
- types of fraud indicators, including:
  - accidents in an industrial area late at night
  - claim report inconsistent with vehicle damage
  - consistent colour transfer
  - consistent striation or scratching of a car
  - damage consistent with weather conditions, such as rain, snow and sleet
  - damage to trim
  - forced entry
  - locks tampered with
  - manufactured damage
  - no independent witnesses
  - no police report

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  - no signs of towing or tow truck driver
  - staged accidents
  - vehicle has a low value
- technical knowledge of motor vehicle mechanical, electrical, surface and structural damage and faults
- general insurance industry knowledge, including relevant sections of:
  - contract and insurance law
  - Insurance Contracts Act
  - Motor Vehicle Insurance and Repair Industry Code of Conduct
  - state or territory Fair Trading Act
- methods for sourcing manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory laws, regulations and standards relating to identifying and reporting vehicle claim fraud indicators, including:
  - commercial-in-confidence practices
  - Competition and Consumer Act
  - copyright law
  - environmental regulations
  - intellectual property
  - personal legal liability
  - Privacy Act
  - Workplace Health and Safety Act or Occupational Health and Safety Act
- workplace policies and procedures relating to identifying and reporting vehicle claim fraud indicators, including:
  - recording and reporting procedures
  - use of digital images.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have assessed, e.g. assessment reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- a range of damaged vehicles, including damage consistent with fraudulent activity
- computer hardware and software, calculators and general office equipment
- fraudulent vehicle claim details and documentation
- industry codes of practice and other relevant documents

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- internet access
- workplace procedures.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVNA001 Provide vehicle loss assessments and identify repair requirements

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to provide a vehicle loss assessment and identify repair requirements. It involves determining vehicle damage and repair action and cost, preparing an assessment report, and completing post-assessment documentation.

The unit applies to those undertaking a vehicle loss assessment and identifying repair requirements of a damaged vehicle in the loss assessment environment. Loss assessments may relate to light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Vehicle Body

Unit Sector

Loss Assessment and Repair Quoting

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare for vehicle assessment	1.1 ***Assessment information*** is gathered 1.2 Assessment information is reviewed and interpreted 1.3 ***Materials, resources and safety equipment*** are located and

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ELEMENTS	PERFORMANCE CRITERIA
	checked for safe use
2. Inspect vehicle	2.1 Vehicle assessment process is determined and followed 2.2 Vehicle to be inspected is located 2.3 ***Safety requirements*** are read and complied with 2.4 Vehicle is inspected in line with insurance claim requirements and workplace policies and procedures 2.5 Preferred dismantling and inspection methods are determined that conform to workplace policies and procedures and vehicle manufacturer, component supplier, and legal requirements 2.6 Dismantling and inspection methods are negotiated and agreed with the repair estimator in a fair and transparent manner 2.7 Damage and faults to vehicle system and component are determined 2.8 Required outsourcing to specialist services is determined
3. Determine vehicle repair action	3.1 Preferred repair method for vehicle system and components is selected that conforms to workplace policies and procedures and vehicle manufacturer, component supplier, and legal requirements 3.2 Preferred repair methods for paint, trim and accessories are selected that conform to workplace policies and procedures and vehicle manufacturer, component supplier, and legal requirements 3.3 Job procedures are determined that use exchanged or recycled parts as appropriate 3.4 Repair methods are communicated and agreed to with repairer and/or specialist services 3.5 Estimated cost of repairs is calculated 3.6 ***Settlement action*** is decided and agreed to with repairer and/or specialist services
4. Prepare assessment report	4.1 Repairs are authorised where assess and authorise instructions are included in assessment information 4.2 Where assess without prejudice is included in assessment information a settlement amount is determined and documented 4.3 ***Recommendations*** are documented as required by industry and organisation 4.4 Assessment report is completed, including either authorised estimated cost of repairs or settlement amount
5. Complete post-assessment administration	5.1 Assessment report is submitted according to workplace policies and procedures 5.2 Repairer invoice is compared against authorised cost estimate 5.3 Discrepancies between invoice and authorised costs are

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ELEMENTS	PERFORMANCE CRITERIA
	investigated where applicable following industry codes and legislative requirements 5.4 Payment of invoice is validated where the invoice and authorised costs are confirmed

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	• interpret assessment information • interpret technical information and specifications • analyse information relating to insurance claims and inspection requirements • understand safety procedures.
Writing skills to:	• use common industry terminology when completing vehicle assessment reports.
Oral communication skills to:	• engage with repairers and specialist providers • negotiate settlement action • obtain vehicle assessment information from others • report work outcomes and problems.
Numeracy skills to:	• calculate cost estimates • interpret technical measurements.

Digital literacy skills to:	• use communication devices and computerised equipment to:
	  • determine current values and costs
	  • prepare vehicle assessment reports
	  • search and gather supporting material, including digital images.

Planning and organising skills to:	• identify and avoid planning and scheduling problems.
Problem-solving skills to:	• identify technical and procedural problems and resolve within scope of own role • prevent time and material wastage.
Technology skills to:	• take digital images.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Assessment information must include:	• assessment notification detailing:
	  • claims handler
	  • driver details
	  • incident details
	  • insurance policy details where applicable
	  • report items
	  • vehicle details
	  • vehicle inspection details, including assess without prejudice or assess and authorise
	  • vehicle location
	  • vehicle owner details
	• digital images
	• quote for repairs.

Materials, resources and safety equipment must include:	• digital camera • electronic or paper-based information and reports • internet connection • personal computer, laptop or tablet • maps • personal protective equipment (PPE) kit.
Safety requirements must include:	• ensuring safe location of vehicle to be inspected • following workplace safety procedures • identifying potential safety hazards.
Settlement action must include one or more of the following:	• cash settlement • repair • total loss.
Recommendations must include one or more of the following:	• additional labour • additional parts • approved or denied report items • in-house specialist repair services • sublet specialist repair services.

Unit Mapping Information

No equivalent unit.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVNA001 Provide vehicle loss assessments and identify repair requirements

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- provide vehicle loss assessment and identify repair requirements on a minimum of two occasions, which involve:
  - one vehicle with paint damage
  - a further vehicle with mechanical damage
- prepare and submit vehicle assessment report relating to the above assessments.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- motor vehicle mechanical, electrical, paint, panel and structural:
  - extensive damage, which is damage that affects the safety and roadworthiness of a vehicle and includes:
    - body panel damage
    - bolt-on vehicle component damage
    - mechanical component damage
    - structural component damage
    - structural damage
    - welded or bonded key structural components, such as chassis rails damage
  - faults
  - dismantling and repair methods
  - minor damage, which is damage that does not affect the safety and roadworthiness of a vehicle and includes:
    - bumper bar graze
    - hail damage
    - panel damage

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- types of specialist services, including:
  - air conditioning
  - automotive glaziers
  - battery electric vehicle (BEV)
  - brake systems
  - cooling systems
  - electrical and electronic systems
  - hybrids
  - liquid petroleum gas (LPG)
  - suspension and wheel alignments
  - transmission
  - trimming
- methods for sourcing current retail costs of vehicles and vehicle components and materials
- vehicle inspection and damage assessment procedures and methodologies, including repair set-up and dismantling procedures
- current assessing and quoting methodologies
- relevant automotive websites to locate information on current best practice and future trends in vehicle loss assessment
- general insurance industry knowledge, including relevant sections of:
  - contract and insurance law
  - Insurance Contracts Act
  - Motor Vehicle Insurance and Repair Industry Code of Conduct
  - state or territory Fair Trading Act
- methods for sourcing original equipment manufacturer (OEM) or authorised agencies' repair procedures and component supplier specifications, workshop manuals and repair guides
- applicable commonwealth, state or territory laws, regulations and standards relating to inspecting vehicles and determining vehicle damage, including:
  - commercial-in-confidence practices
  - environmental regulations
  - intellectual property
  - personal legal liability
  - applicable Workplace Health and Safety Act or Occupational Health and Safety Act
- workplace policies and procedures relating to inspecting vehicles and determining vehicle damage, including:
  - recording and reporting procedures
  - use of digital images.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have assessed, e.g. assessment reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- a range of operational vehicles with both minor and extensive vehicle damage
- relevant information, including OEM or authorised agencies' repair specifications, workshop manuals and repair guides
- relevant materials, resources and safety equipment, including digital camera, paperwork and personal protective equipment kit
- relevant safety materials, including workplace safety procedures
- vehicle assessment information, including assessment notification, digital images and quote.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVNA002 Provide vehicle total loss assessments

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to provide a vehicle total loss assessment. It involves determining vehicle damage and repair action and cost, calculating prior accident and salvage values, and completing post-assessment documentation.

The unit applies to those undertaking a total loss assessment of a damaged vehicle in the loss assessment environment. Loss assessment may relate to light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Vehicle Body

Unit Sector

Loss Assessment and Repair Quoting

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare for vehicle assessment	1.1 ***Assessment information*** is gathered 1.2 Assessment information is reviewed and interpreted 1.3 ***Materials, resources and safety equipment*** are located and checked for safe use
2. Inspect vehicle	2.1 Vehicle assessment process is determined and followed

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Vehicle to be inspected is located 2.3 Workplace policies and procedures, ***safety requirements*** and workplace environmental practices and policies are read and complied with 2.4 Vehicle is inspected to ensure compliance with insurance claim requirements in line with compliance requirements 2.5 Preferred dismantling and inspection methods are determined that conform to workplace policies and procedures and vehicle manufacturer, component supplier, and legal requirements 2.6 Dismantling and inspection methods are communicated to repair estimator 2.7 Damage and faults to vehicle system and components are determined 2.8 Required outsourcing to specialist services is determined
3. Determine vehicle repair action	3.1 Preferred repair method for vehicle system and components is selected that conforms to vehicle workplace policies and procedures and vehicle manufacturer, component supplier, and legal requirements 3.2 Preferred repair methods for paint, trim and accessories are selected that conform to workplace policies and procedures and vehicle manufacturer, component supplier, and legal requirements 3.3 Job procedures are determined that use exchanged or recycled parts as appropriate 3.4 Repair methods are communicated and agreed with repairer and/or specialist services 3.5 Estimated cost of repairs is calculated 3.6 Settlement action is decided
4. Calculate total loss value	4.1 ***Valuation supporting documentation*** is compiled 4.2 Salvage value is determined 4.3 ***Total loss calculation*** is performed 4.4 ***Research and validation*** of vehicle prior accident values and salvage value are conducted
5. Complete post-assessment documentation	5.1 Written-Off Vehicles Register (WOVR) information is completed according to relevant state or territory regulations, and workplace policies and procedures 5.2 Vehicle assessment report is completed, including recommended settlement 5.3 WOVR entry information and vehicle assessment report are submitted according to workplace policies and procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	• interpret assessment information • interpret technical information and specifications • interpret information relating to insurance claims and inspection requirements • understand safety procedures.
Writing skills to:	• accurately record WOVR information • use common industry terminology when completing vehicle assessment reports.
Oral communication skills to:	• engage with repairers and specialist providers • obtain vehicle assessment information from others • report work outcomes and problems • use common industry terminology.
Numeracy skills to:	• calculate cost estimates • calculate total loss • interpret technical measurements.

Digital literacy skills to:	• use communication devices and computerised equipment to:
	  • determine current values and costs
	  • prepare WOVR information and vehicle assessment report
	  • search and gather supporting material, including digital images.

Planning and organising skills to:	• identify and avoid planning and scheduling problems.
Problem-solving skills to:	• identify technical and procedural problems • prevent time and material wastage.
Technology skills to:	• take digital images.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Assessment information must include:	• assessment notification detailing:
	  • claims handler
	  • driver details
	  • incident details
	  • insurance policy details where applicable
	  • report items
	  • vehicle details
	  • vehicle inspection details, including assess without prejudice or assess and authorise
	  • vehicle location
	  • vehicle owner details
	• digital images.

Materials, resources and safety equipment must include:	• digital camera • electronic or paper-based information and reports • internet connection • personal computer, laptop or tablet • maps • personal protective equipment (PPE) kit.
Safety requirements must include:	• ensuring safe location of vehicle to be inspected • following workplace safety procedures • identifying potential safety hazards.

Valuation supporting documentation must include one or more of the following:	• web-based references, such as:
	  • dealer guides
	  • vehicle seller guides
	• published references
	• local sales documents.

Total loss calculation must include one or more of the following formulas:	• cost of repairs exceeds sum insured or market value • cost of repairs plus salvage value is greater than or equal to sum insured or market value.

Research and validation must include one or more of the following:	• subject matter experts, such as:
	  • auction yards
	  • salvage yards
	• web-based references, such as:
	  • dealer guides
	  • vehicle seller guides.

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Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVNA002 Provide vehicle total loss assessments

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- provide a vehicle total loss assessment on a minimum of two occasions, on different damaged vehicles
- complete and submit Written-Off Vehicles Register (WOVR) information and vehicle assessment report.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- motor vehicle mechanical, electrical, paint, panel and structural:
  - minor and extensive damage and faults
  - dismantling and repair methods
  - transferred damage and individual vehicle design
- methods for sourcing current retail costs of vehicles and vehicle components and materials
- vehicle inspection and damage assessment procedures and methodologies, including repair set-up and dismantling procedures
- current assessing and quoting methodologies, including total loss calculation
- relevant automotive websites to locate information on current best practice and future trends in vehicle loss assessment
- general insurance industry knowledge, including relevant sections of:
  - Insurance Contracts Act
  - state or territory Fair Trading Act
  - Motor Vehicle Insurance and Repair Industry Code of Conduct
  - contract and insurance law
- methods for sourcing manufacturer and component supplier specifications, including workshop manuals and repair guides

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- applicable commonwealth, state or territory laws, regulations and standards relating to inspecting vehicles and determining vehicle damage, including:
  - commercial-in-confidence practices
  - Competition and Consumer Act
  - copyright law
  - intellectual property
  - personal legal liability
  - WOVR legislation
  - Workplace Health and Safety Act or Occupational Health and Safety Act
  - environmental regulations
- workplace policies and procedures relating to vehicle inspection and determining vehicle damage, including:
  - recording and reporting procedures
  - use of digital images.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have assessed, e.g. assessment reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- a range of operational vehicles with both minor and extensive vehicle damage
- relevant information:
  - original equipment manufacturer (OEM)
  - recognised agency information
  - design specification
  - repair procedures
  - body repair manuals
- relevant materials, resources and safety equipment, including digital camera, paperwork and personal protective equipment kit
- relevant safety materials, including workplace safety procedures
- vehicle assessment information, including assessment notification, digital images and quote.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVNA003 Review vehicle repair quotations

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to review a vehicle repair quotation. It involves reviewing cost and time requirements in the repairer's quote to ensure that they accurately represent the repair method to reinstate the vehicle to pre-damage condition, and to determine that the repair cost is fair and reasonable. It also involves ensuring that quotation figures are accurate and completing the required documentation.

The unit applies to those reviewing a body repair shop quotation to repair a damaged vehicle in the loss assessment environment. Vehicles to be repaired may include light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Loss Assessment and Repair Quoting

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare for work	1.1 ***Quotation*** and workplace policies and procedures are located 1.2 Quotation information and supporting documents are collected

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ELEMENTS	PERFORMANCE CRITERIA
2. Review time requirements	2.1 Viable repair time requirements are estimated 2.2 Turn-around time for subcontracted specialist services is estimated 2.3 Total time for ***repair work*** is estimated 2.4 Time requirement estimations are documented
3. Review part requirements	3.1 Viability of replacement parts compared to repair is determined while meeting quality standards, ***legal requirements***, ***safety requirements***, and workplace practices 3.2 Relevance of identified parts for the repair is checked 3.3 Potential variations to the original parts costing is determined 3.4 Cost of parts and consumables is estimated using industry and workplace pricing standards 3.5 Findings relating to parts are documented
4. Review subcontract specialist services work	4.1 Nature and scope of subcontract testing, service and repair work are determined 4.2 Completed subcontracted repair work is checked 4.3 Potential variations to subcontract work costing are identified 4.4 Cost of subcontract testing, service and repair work is estimated using industry and workplace pricing standards 4.5 Subcontract testing, parts, service and repair work requirements are documented
5. Agree on quotation with repairer	5.1 Time requirements and costs are negotiated and agreed with repairer in a fair and transparent manner 5.2 Quotation adjustments are made if required 5.3 Quotation is agreed and finalised 5.4 Authorisation to proceed with the repair is provided as required to reinstate the vehicle to pre-damage condition following workplace policies and procedures
6. Finalise quotation review	6.1 Findings are documented using workplace-approved quotation format 6.2 Findings and repair authorisation documentation are reported to appropriate persons as required by workplace policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description

Reading skills to:	• review a vehicle repair quotation to:
	  • interpret technical information
	  • research information
	  • understand common industry terminology
	  • understand manufacturer and component specifications.

Oral communication skills to:	• discuss and finalise quotation with repairer • discuss quotation with supervisor, subcontractors and customers • report work outcomes and problems.
Numeracy skills to:	• estimate costs, time requirements and subcontract work.
Digital literacy skills to:	• access repair and time data • document and review quotation results.
Problem-solving skills to:	• identify technical and procedural problems • prevent time and material wastage problems.
Teamwork skills to:	• work effectively and cooperatively with others to optimise workflow and productivity.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Quotations must include:	• customer details • labour cost estimates • replacement parts required and their cost • subcontracted or specialist work • vehicle details • work to be performed.
Repair work must include:	• all vehicle damage, including minor and extensive damage.
Legal requirements are to be in accordance with applicable commonwealth, state, or territory legislation, regulations, certification requirements and codes of practice, and must include:	• environmental regulations • intellectual property.

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Safety requirements are to be in accordance with applicable commonwealth, state or territory Workplace Health and Safety Act or Occupational Health and Safety Act and must include:	• ensuring safe location of vehicle to be inspected • following workplace safety procedures • identifying potential safety hazards.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVNA003 Review vehicle repair quotations

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- review a minimum of two vehicle repair quotations for vehicle repair jobs, one relating to minor damage, the other to extensive damage.
- for each quotation:
  - agreeing on a final quotation with repairer
  - completing a vehicle assessment report.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- motor vehicle mechanical, electrical, paint, panel and structural:
  - extensive damage, which is damage that affects the safety and roadworthiness of a vehicle and includes:
    - body panel damage
    - bolt-on vehicle component damage
    - mechanical component damage
    - structural component damage
    - structural damage
    - welded or bonded key structural components, such as chassis rails damage
  - faults
  - dismantling and repair methods
  - minor damage, which is damage that does not affect the safety and roadworthiness of a vehicle and includes:
    - bumper bar graze
    - hail damage
    - panel damage

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- types of specialist services, including:
  - air conditioning
  - automotive glaziers
  - battery electric vehicle (BEV)
  - brake systems
  - cooling systems
  - electrical and electronic systems
  - hybrids
  - liquid petroleum gas (LPG)
  - suspension and wheel alignments
  - transmission
  - trimming
- basic principles of estimating and costing
- methods for sourcing current retail costs of vehicles and vehicle components and materials
- current assessing and quoting methodologies
- relevant automotive websites to locate information on current best practice and future trends in the vehicle loss assessment environment
- general insurance industry knowledge, including relevant sections of:
  - contract and insurance law
  - Insurance Contracts Act
  - Motor Vehicle Insurance and Repair Industry Code of Conduct
  - state or territory fair Trading Act
- applicable commonwealth, state or territory laws, regulations and standards relating to reviewing a vehicle repair quotation, including:
  - commercial-in-confidence practices
  - environmental regulations
  - intellectual property
  - personal legal liability
  - applicable Workplace Health and Safety Act or Occupational Health and Safety Act
- workplace policies and procedures relating to reviewing a vehicle repair quotation, including:
  - recording and reporting procedures
  - use of digital images.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Where assessment of competency includes third party evidence, individuals must provide evidence that links them to the vehicle repair quotes that they have reviewed, e.g. assessment reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- a range of motor vehicles with both minor and extensive damage
- relevant information:
  - original equipment manufacturer (OEM)
  - recognised agency information
  - design specification
  - repair procedures
  - body repair manuals
- relevant materials, resources and safety equipment, including digital camera, paperwork and personal protective equipment kit
- relevant safety materials, including workplace safety procedures
- vehicle assessment information, including assessment notification, digital images and quotes
- Repair Times manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVNA004 Apply insurance industry knowledge to vehicle loss assessments

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to apply insurance industry knowledge to vehicle loss assessment. It involves using insurance industry terminology and trends; and applying policy, Acts and regulations to ensure the correct conduct of a vehicle loss assessment. .

It applies to those applying insurance industry knowledge to a vehicle loss assessment in the loss assessment environment. Loss assessment may relate to light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Vehicle Body

Unit Sector

Loss Assessment and Repair Quoting

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Develop and apply an understanding of the insurance industry	1.1 Sources of information on the structure and functions of the insurance industry are identified and accessed according to workplace policies and procedures

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ELEMENTS	PERFORMANCE CRITERIA
	1.2 Broad structures of the insurance industry and their relationship with each other are identified and appropriately applied to day-to-day work 1.3 Insurance industry ***terminology and vocabulary*** are used in the correct context 1.4 ***Trends and technology*** in the insurance industry are monitored on an ongoing basis to inform personal work practices 1.5 Insurance organisation-specific policies, procedures and processes are identified, clarified where necessary, and applied
2. Develop and apply an understanding of government Acts and regulations relevant to the insurance industry	2.1 Statutory insurance industry ***principles, obligations and compliance requirements*** of a loss assessor are interpreted and complied with 2.2 ***Reporting requirements*** and procedures are identified 2.3 Requirements under privacy law are identified, clarified where necessary, and complied with
3. Develop and apply an understanding of loss assessment processes	3.1 Knowledge of ***loss assessment processes, procedures and policy*** is interpreted 3.2 ***Condition of vehicle*** compared to incident description is analysed to determine incident-related damage 3.3 Conflict resolution principles are applied 3.4 Statutory insurance industry principles, obligations and compliance requirements, and their relationship to identified vehicle damage are interpreted, clarified where necessary, and applied 3.5 Automotive industry technical knowledge and experience are applied to determine accuracy of vehicle damage estimate to return the vehicle to pre-damage condition that conforms to manufacturer guidelines and industry standards

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	• apply loss assessment processes, procedures and policies • interpret and apply statutory insurance industry principles, obligations and compliance requirements • understand broad insurance industry structure, functions and relationships

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Skills	Description
	• apply organisation-specific policies, procedures and processes.
Writing skills to:	• use common industry terminology • compile reports, including vehicle assessment reports and Written-Off Vehicles Register (WOVR) information • complete templates and proformas.
Oral Communication skills to:	• use insurance industry terminology and vocabulary • engage with repairers and specialist providers • engage with vehicle owners.
Numeracy skills to:	• interpret technical measurements • determine accuracy of vehicle damage estimate.
Digital Literacy skills to:	• access insurance industry information.
Problem Solving skills to:	• clarify policy and privacy law discrepancies • compare and analyse condition of vehicle to incident description to determine incident-related damage.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Terminology and vocabulary must include:	• agreed value
	• assessments
	• certificates of insurance
	• claims
	• depreciation
	• excess
	• indemnity
	• market value
	• misrepresentation
	• mitigation
	• no claim:
	  • bonus
	  • discount
	  • rating
	• non-disclosure
	• policy book
	• pool of funds

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	• premium • pre-accident condition • product disclosure statement (PDS) • reinsurance • renewals • subrogation • underwriting • unreasonable or capricious grounds.

Trends and technology must include the following:	• digital imaging
	• electronic-based researching and reporting
	• personal electronic devices, such as:
	  • laptop
	  • mobile phone
	  • tablet.

Principles, obligations and compliance requirements must include:	• Australian Prudential Regulatory Authority (APRA) regulations
	• Financial Services Reform (FSR) Act
	• General Insurance Code of Practice
	• Insurance Contracts Act, including:
	  • duty of disclosure
	  • utmost good faith
	• intellectual property principles and practice
	• Motor Vehicle Insurance and Repair Industry Code of Conduct
	• Commercial-In-Confidence practices
	• Competition and Consumer Act
	• privacy law
	• commonwealth, state or territory regulatory requirements
	• statutory changes to the criteria of the national WOVR.

Reporting requirements must include the following:	• assessment report • WOVR information for total loss assessment.
Loss assessment processes, procedures and policy must include at least three of the following:	• assessment report • WOVR • fraud indicator report • vehicle condition report.
Condition of vehicle must include the following:	• direction of impact (DOI) appropriate to incident description • old and inconsistent damage • pre-accident condition and potential contributing factors.

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Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVNA004 Apply insurance industry knowledge to vehicle loss assessments

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- apply insurance industry knowledge to vehicle loss assessment on a minimum of two occasions.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- current assessing and quoting methodologies
- relevant automotive websites to locate current best practice and future trends information
- general insurance industry knowledge, including relevant sections of:
  - Commercial-In-Confidence practices
  - contract and insurance law
  - Insurance Contracts Act
  - intellectual property
  - Motor Vehicle Insurance and Repair Industry Code of Conduct
  - personal legal liability
  - State or Territory Fair Trading Act
- applicable commonwealth, state or territory laws, regulations and standards relating to vehicle loss assessment, including:
  - environmental regulations
  - intellectual property
  - legislation
  - applicable Workplace Health and Safety Act or Occupational Health and Safety Act
- workplace processes, policies and procedures relating to vehicle loss assessment and reporting requirements.

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Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third party evidence, individuals must provide evidence that links them to the vehicles that they have assessed, e.g. assessment reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- relevant documentation, including incident description, applicable codes, acts, legislation, regulations and insurance industry policies
- relevant materials, resources and safety equipment, including digital camera, paperwork and personal protective equipment (PPE) kit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVNA005 Inspect quality of vehicle repair work

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to inspect vehicle repair work to ensure that it is being undertaken as agreed by the insurer and repairer.

The unit applies to those involved in inspecting the technical quality of repair work in the vehicle loss assessment environment, at the request of either the customer or the repairer.

Repair work may be to light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Vehicle Body

Unit Sector

Loss Assessment and Repair Quoting

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare for vehicle inspection	1.1 Vehicle information is accessed and reviewed 1.2 Vehicle to be inspected is identified and checked against vehicle information 1.3 Appropriate ***vehicle inspection method*** is determined 1.4 Materials and equipment required to conduct vehicle inspection

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ELEMENTS	PERFORMANCE CRITERIA
	are identified and prepared
2. Inspect vehicle	2.1 Original equipment manufacturer (OEM) or authorised agencies and ***component specifications*** are interpreted and applied 2.2 Vehicle is inspected to determine that repair has been undertaken to an acceptable industry standard in line with compliance requirements 2.3 Safety and workplace procedures are interpreted and complied with 2.4 Vehicle inspection personal protective equipment (PPE) is used 2.5 Repair faults are identified 2.6 Faults requiring ***rectification action*** are decided and repair work plan is prepared
3. Authorise further action	3.1 Repair faults and recommended repair methods are discussed with current or new repairer 3.2 Cost and quotation variations are agreed with current or new repairer 3.3 Corrective work process is authorised with current or new repairer
4. Complete work processes	4.1 Actions undertaken are documented as required under the relevant code of practice 4.2 Vehicle inspection report is completed and provided to appropriate person 4.3 Reports are processed as required by workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• identify workplace procedures relating to inspecting repair quality.
Reading skills to:	• interpret OEM or authorised agencies' repair procedures • interpret vehicle technical information and specifications, including vehicle inspection reports.
Oral communication skills to:	• communicate with customers, repairers and insurance organisations • confirm inspection requirements • question and listen to others regarding repair work • reach agreement on cost and quotation variations.

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Numeracy skills to:	• interpret vehicle specifications • interpret pre- and post-repair measurements • identify OEM or authorised agencies' recommended repair measurements • identify cost variations.
Digital literacy skills to:	• interpret vehicle repair and diagnostic data • use communication devices and computerised equipment to document and report results.
Planning and organising skills to:	• coordinate communication between customer, repairers and insurance organisation.
Technology skills to:	• use electronic devices to inspect the quality of mechanical, body and paint repair work • use electronic vehicle repair measuring systems.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Vehicle inspection method must include at least one of the following:	• physically checking and inspecting damage to vehicle and components • referring to reports, publications and OEM or authorised agencies' specifications • using digital images of damage to vehicle and components.
Component specifications must include at least one of the following:	• vehicle design specifications and drawings • repair instructions and procedures • component replacement instructions and procedures.
Rectification action must include one or more of the following:	• repairing the vehicle at the original repairer • repairing the vehicle at a new repairer and seeking recovery from the original repairer • declaring the vehicle a total loss and disposing of the vehicle at auction • declaring the vehicle a total loss and selling vehicle in its present condition back to the original repairer.

Unit Mapping Information

No equivalent unit.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVNA005 Inspect quality of vehicle repair work

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect vehicle repair work on a minimum of two occasions, where:
  - one repair involves rectification action undertaken at the original repairer
  - the other repair involves rectification action undertaken at a new repairer**.**

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- type and use of personal protection equipment (PPE) required when inspecting repair work
- types of rectification action and process, including:
  - repairing the vehicle at original repairer
  - repairing the vehicle at a new repairer and seeking recovery from the original repairer
  - declaring the vehicle a total loss and disposing of the vehicle at auction
  - declaring the vehicle a total loss and selling the vehicle in its present condition back to the original repairer
- motor vehicle mechanical, electrical, paint, panel and structural repairs, including:
  - damage and faults
  - dismantling and repair methods
- current assessing and quoting methodologies
- vehicle inspection and damage assessment procedures and methodologies, including repair set-up and dismantling procedures
- general insurance industry knowledge, including relevant sections of:
  - contract and insurance law
  - Insurance Contracts Act
  - Motor Vehicle Insurance and Repair Industry Code of Conduct

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  - state or territory Fair Trading Act
- methods for sourcing original equipment manufacturer (OEM) or authorised agencies' repair procedures and component supplier specifications, workshop manuals and repair guides
- applicable commonwealth, state or territory laws, regulations and standards relating to inspecting quality of vehicle repair work, including:
  - commercial-in-confidence practices
  - environmental regulations
  - intellectual property
  - personal legal liability
  - applicable Workplace Health and Safety Act or Occupational Health and Safety Act
- workplace procedures relating to inspecting the quality of vehicle repair work, including:
  - recording and reporting procedures
  - use of digital images.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have inspected, e.g. reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace location or simulated workplace
- a range of vehicles with both satisfactory and unsatisfactory repair work
- relevant materials, resources and safety equipment, including digital camera, paperwork and PPE kit
- relevant information, including OEM or authorised agencies' repair specifications, workshop manuals and repair guides
- vehicle details.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVNA006 Identify and value vehicle salvage

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to identify and value vehicle and component salvage. It involves inspecting a vehicle to identify and cost saleable items.

The unit applies to those identifying and valuing saleable salvage and components on a damaged vehicle in the loss assessment environment. Vehicles and components may include light vehicles, commercial vehicles, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Vehicle Body

Unit Sector

Loss Assessment and Repair Quoting

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare for work	1.1 Work instructions are used to determine job requirements 1.2 Vehicle to be inspected is located 1.3 ***Workplace policies and procedures***, ***legal requirements***, and ***component specifications*** are read and interpreted 1.4 Workplace requirements, ***safety requirements*** and ***workplace***

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ELEMENTS	PERFORMANCE CRITERIA
	environmental practices and policies are identified 1.5 Safety equipment and tooling equipment are selected and checked 1.6 ***Vehicle inspection methods*** are determined to minimise waste material and components
2. Inspect vehicle to identify saleable systems and components	2.1 Vehicle systems and components are dismantled and inspected without causing damage 2.2 Serviceable vehicle systems and components are identified 2.3 Saleable ***vehicle salvage***, or vehicle systems and components, are determined and documented following legal requirements
3. Determine vehicle and component retail price	3.1 Value of identified saleable salvage, or vehicle systems and components is determined 3.2 ***Category of vehicle salvage*** is determined 3.3 Retail price of each saleable system and component is estimated 3.4 Details of total loss vehicle are reported to the relevant statutory body according to workplace policies and procedures
4. Clean up work area	4.1 Reusable material is collected and stored 4.2 Waste and scrap are removed according to workplace policies and procedures 4.3 Equipment and work area are cleaned and inspected to serviceable condition according to workplace procedures 4.4 Faults in unsaleable equipment are determined and tagged according to workplace policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	• interpret manufacturer specifications • analyse information relating to workplace policies and procedures • understand common industry terminology, plans and safety procedures and follow Written-Off Vehicles Register (WOVR) requirements.
Writing skills to:	• report on vehicle salvage saleable items and their value.
Numeracy skills to:	• use sources of information to work out value of saleable items,

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Skills	Description
	correctly entering data into salvage report • decide and check on estimation of retail prices.
Digital literacy skills to:	• use computerised technology and communications devices to research and report on vehicle salvage saleable items and their value.
Planning and organising skills to:	• identify and avoid planning and scheduling problems.
Problem-solving skills to:	• avoid time and material wastage • identify technical and procedural problems.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Workplace policies and procedures must include:	• recording and reporting procedures • safe work procedures.
Legal requirements are to be in accordance with applicable commonwealth, state, or territory legislation, regulations, certification requirements and codes of practice, and must include:	• environmental regulations • intellectual property.
Component specifications must include at least one of the following:	• vehicle design specifications and drawings • repair instructions and procedures • component replacement instructions and procedures • inspecting vehicles for saleable components.
Safety requirements are to be in accordance with applicable commonwealth, state or territory Workplace Health and Safety Act or Occupational Health and Safety Act and must include:	• ensuring safe location of vehicle to be inspected • following workplace safety procedures • identifying potential safety hazards.

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Workplace environmental practices must include:	• managing clean-up • managing waste • minimising dust and noise.
Vehicle inspection methods must include at least one of the following:	• aural, visual and operational checking of damage to vehicle and components • visually examining digital images of damage to vehicle and components.
Vehicle salvage must include at least one of the following:	• bumper bar • saleable items as listed on the policy • tow bar • vehicle components • vehicle system.
Category of vehicle salvage must include at least one of the following:	• repairable write-off • statutory write-off.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVNA006 Identify and value vehicle salvage

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- identify and value vehicle salvage on a minimum of two occasions, including:
  - accurately calculating vehicle salvage value
  - correctly identifying vehicle salvage category.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- motor vehicle mechanical, electrical, paint, panel and structural:
  - dismantling and repair methods
  - loss recovery methods and costs
  - inspection methods and procedures
- general insurance industry knowledge, including relevant sections of:
  - contract and insurance law
  - Insurance Contracts Act
  - Motor Vehicle Insurance and Repair Industry Code of Conduct
  - state or territory Fair Trading Act
- methods for sourcing original equipment manufacturer (OEM) or authorised agencies' repair procedures, and component supplier specifications, workshop manuals and repair guides
- methods for sourcing current retail costs of vehicles, vehicle components and materials
- methods for accessing independent sources with the required skills to value vehicle salvage
- salvage disposal contractors and auction houses
- applicable commonwealth, state or territory laws, regulations and standards relating to identifying vehicle salvage saleable items and determining their value, including:

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  - commercial-in-confidence practices
  - environmental regulations
  - intellectual property
  - personal legal liability
  - applicable Workplace Health and Safety Act or Occupational Health and Safety Act
- workplace policies and procedures relating to identifying vehicle salvage saleable items and determining their value, including:
  - recording and reporting procedures
  - work organisation and planning processes.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle salvage that they have valued, e.g. assessment reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- work instructions
- a range of total loss vehicles
- computer hardware and software, calculators and general office equipment
- internet access.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVNA008 Apply automotive body and paint knowledge to vehicle loss assessments

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to apply automotive body and paintwork knowledge to identify body and paint damage.

The unit applies to those applying specialist body and paint knowledge to a vehicle loss assessment in the loss assessment environment. Vehicles and components may include light vehicles, commercial vehicle, heavy vehicles, agricultural and plant equipment, recreational vehicles and motorcycles.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Vehicle Body

Unit Sector

Loss Assessment and Repair Quoting

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Develop and apply an understanding of automotive paintwork knowledge	1.1 Knowledge of operating principles of ***paint preparation, application***, and refinishing process and techniques, including ***paint products*** and imperfection identification is developed 1.2 Knowledge of paint preparation and paint product is applied to

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ELEMENTS	PERFORMANCE CRITERIA
	loss assessment processes 1.3 Paintwork damage is identified using ***colour matching techniques***
2. Develop and apply an understanding of automotive body knowledge	2.1 Knowledge of operating principles of ***vehicle structure*** is developed 2.2 knowledge of operating principles of vehicle ***supplementary restraint systems*** (SRS***)*** is developed 2.3 Knowledge of operating principles of ***vehicle body repair procedures*** is developed 2.4 Knowledge of vehicle structure, SRS and body repair procedures is applied to loss assessment processes, procedures and policies 2.5 Bodywork damage is identified
3. Develop and apply an understanding of advanced specialist vehicle information	3.1 Knowledge of ***specific vehicle types*** is developed, clarified where necessary, and applied to loss assessment processes, procedures and policies 3.2 Knowledge of ***latest technology*** relating to automotive paint and bodywork is developed, clarified where necessary, and applied to loss assessment processes, procedures and policies 3.3 ***Research techniques*** and advanced specialist vehicle knowledge are employed in order to identify vehicle damage

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• source information on loss assessment processes, procedures and policies.
Reading skills to:	• research and interpret automotive paintwork, body, and advanced specialist vehicle information.

Oral communication skills to:	• discuss with repairers and specialist providers problems relating to:
	  • latest automotive technology
	  • specific vehicle types
	  • vehicle body
	  • vehicle paintwork.

Numeracy skills to:	• interpret technical measurements in order to determine extent of damage.

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Digital literacy skills to:	• use communication devices and computerised equipment to research advanced specialist vehicle information.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Paint preparation and application must include:	• colour matching
	• paint film thickness gauge
	• paint code list
	• paint mixing
	• masking
	• surface preparation, including:
	  • sanding
	  • degreasing.

Paint products must include:	• acrylic enamel • air dry enamel • clear over base (COB) • multi-layer • pearls • polyurethane • primers and fillers • special effects • two-pack paint • waterborne paint.
Colour matching techniques must include at least one of the following:	• eye • formula • colour cards • colour spectrometer.
Vehicle structure must include:	• alloys • collision energy management • composite materials • foams structural and non-structural • glass components • metals • plastics • vehicle structural integrity and component interrelationship.
Supplementary restraint	• airbag systems, including:

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systems must include:	• console • curtain • dash • knee • pillar • seat • side • steering wheel • seat belt tensioners • sensors, actuators and control modules.
Vehicle body repair procedures must include:	• alignment systems • panel repair, including the application of filler • measuring systems • methods and types of: • bonding • fastening • riveting • welding.
Specific vehicle types must include at least one of the following:	• agricultural and plant equipment • heavy vehicles • commercial vehicles • light vehicles • motorcycles • recreational vehicles.
Latest technology must include:	• alloy steel technology • aluminium technology • composite materials • electrical and electronic systems • high strength steels • painting preparation and procedures.
Research techniques must include:	• internet • reference material, including: • original equipment manufacturer (OEM) or authorised agency repair guides • paint code list • repair guides • subject matter experts.

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Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVNA008 Apply automotive body and paint knowledge to vehicle loss assessments

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria and foundation skills:

- apply specialist automotive knowledge to vehicle loss assessment processes and procedures on a minimum of two occasions, including:
  - automotive paintwork and body knowledge
  - latest automotive technology knowledge
  - specific vehicle type knowledge
  - identification of vehicle body and paint damage.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- operating principles of paint preparation and refinishing process and techniques, including:
  - colour matching
  - imperfection identification
  - paint products
- operating principles of supplementary restraint systems (SRS)
- operating principles of vehicle structural repair and procedures, including:
  - measuring and alignment systems
  - welding, bonding and fastening methods and types
- operating principles of vehicle structure, including:
  - alloys
  - metals
  - other materials
- paintwork and body:

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    - damage and faults
    - dismantling and repair methods
    - technical knowledge relating to a specific vehicle type
- technical knowledge of latest technology relating to vehicle paintwork and body repair, including:
    - composite materials
    - high-strength steels
    - waterborne paints
    - painting preparation and procedures
    - SRS
- vehicle inspection and damage assessment procedures and methodologies, including repair set-up and dismantling procedures
- current assessing and quoting methodologies
- relevant automotive websites to locate information on current best practice and future trends in vehicle loss assessment
- methods for sourcing original equipment manufacturer (OEM) or authorised agencies' repair procedures, component supplier specifications and repair guides
- applicable commonwealth, state or territory laws, regulations and standards relating to vehicle loss assessment and reporting requirements, including:
    - environmental regulations
    - intellectual property
    - applicable Workplace Health and Safety Act or Occupational Health and Safety Act
- workplace policies and procedures relating to vehicle loss assessment and reporting requirements, including:
    - recording and reporting procedures
    - use of digital images.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have assessed, e.g. assessment reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- a range of vehicles with paint and body damage
- relevant information, including OEM or authorised agencies' repair procedures, component supplier specifications and repair guides
- relevant materials and resources.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTA001 Prepare vehicles for customer use

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to clean and detail vehicles and components before customer delivery. It involves preparing for the task, selecting and using cleaning products, materials, and cleaning tools and equipment, and completing workplace processes and documentation.

It applies to those working in the automotive detailing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to clean and detail vehicle	1.1 Job requirements are determined from workplace instructions 1.2 ***Cleaning methods*** and detailing materials are selected and

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	checked for quality 1.3 Safety data sheets (SDS) are located and interpreted 1.4 Quantities of ***cleaning materials*** are calculated and prepared from workplace instructions 1.5 Hazards associated with the work are identified and risks are managed 1.6 Cleaning tools and equipment, including personal protective equipment (PPE), are identified and inspected for serviceability 1.7 Work area is prepared and work is planned to minimise waste and manage time efficiently
2. Clean and detail vehicle for delivery	2.1 Vehicle and components are selected and checked 2.2 Vehicle and components are cleaned and detailed according to workplace procedures and ***safety and environmental requirements***, and without causing damage to vehicle or components
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills	• clarify instructions and procedures

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Skills	Description
to:	
Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate required cleaning materials and mixing ratios.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Cleaning methods must include:	• hand cleaning • machine assisted cleaning.
Cleaning materials must include:	• paint polishes and protection agents • glass cleaning products • upholstery and leather cleaning products • carpet cleaning products.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using SDS for cleaning products
	  • using tools and equipment
	  • handling and storing cleaning products
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials and cleaning chemicals.

Unit Mapping Information

Equivalent to AURVTA2001 Prepare vehicle, components and equipment for customer use

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTA001 Prepare vehicles for customer use

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- prepare three different vehicles for customer use, cleaning each vehicle's:
  - exterior
  - interior, including:
    - seats
    - carpets
    - door trims
    - dash and steering wheel.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to preparing vehicles for customer use, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for cleaning products
  - using tools and equipment
  - handling and storing cleaning products
- environmental requirements, including procedures for trapping, storing and disposing of waste materials and cleaning chemicals
- type and use of cleaning materials, including:
  - vehicle washing liquid
  - polishes and glazes

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  - window cleaners
- type and operation of cleaning equipment, including:
  - high pressure washer
  - vacuum cleaner
- procedures and requirements for protecting vehicle and components when preparing vehicles for use, including electrical wiring and electrical connections
- procedures for final inspection of vehicle to ensure it is ready for customer use.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have prepared for customer use, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- SDS for cleaning products
- three different vehicles that require cleaning and detailing
- PPE required to clean vehicles
- cleaning materials to prepare vehicle for customer use
- tools, equipment and materials appropriate for preparing vehicles for customer use.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTA002 Remove and replace vehicle supplementary restraint systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and replace vehicle supplementary restraint system (SRS) units and assemblies. It involves preparing for the task, selecting and using specialist tools and equipment to deactivate, remove and replace SRS components, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
replace vehicle SRS	1.2 SRS removal and replacement specifications are sourced from original equipment manufacturer (OEM) or authorised agency, and are interpreted 1.3 SRS component requiring removal and replacement is identified and selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Hand and power tools, including personal protective equipment (PPE), are selected and checked for serviceability 1.6 Work is planned and procedures are determined to minimise waste
2. Deactivate and remove SRS	2.1 SRS is deactivated according to OEM or authorised agency approved methods, workplace procedures and ***safety requirements*** 2.2 SRS is removed according to OEM or authorised agency approved methods, workplace procedures and safety requirements, and without causing damage to system or components 2.3 SRS component is tagged and stored according to OEM or authorised agency approved methods and workplace procedures
3. Replace SRS	3.1 SRS component is checked and matched to vehicle 3.2 SRS is replaced according to OEM or authorised agency approved methods, workplace procedures and safety requirements, and without causing damage to system or components
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Replaced SRS components are disposed of according to OEM or authorised agency approved methods 4.3 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.4 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.5 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate fitting measurements.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify SRS defects and potential problems associated with removal and replacement.
Technology skills to:	• use specialised tools to remove and replace SRS systems.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • manually handling SRS systems and components
	  • using hand tools and equipment.

Unit Mapping Information

Equivalent to AURVTA3002 Remove and replace supplementary restraint systems

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTA002 Remove and replace vehicle supplementary restraint systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- deactivate, remove and replace supplementary restraint systems (SRS) on two different vehicles, in which the work must involve two of the following:
  - steering wheel airbag
  - dash panelling airbag
  - side curtain airbag
  - seat belt pre-tensioners.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and replacing vehicle SRS, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling SRS systems and components
  - using hand tools and equipment
- types and operation of SRS components, including:
  - airbag systems, including:
    - steering wheel airbag
    - dash panelling airbag
    - side curtain airbag
  - seat belt pre-tensioners
- replacement procedures for SRS components, including:

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  - deactivation
  - removal
  - installation
  - resetting
  - inspection
- procedures for protecting vehicle when removing and replacing SRS
- procedures for final inspection of fitted SRS, including compliance with:
  - original equipment manufacturer (OEM) specifications
  - authorised agency instructions and specifications.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to vehicles where they have removed and replaced SRS, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required to remove and replace SRS components
- OEM or authorised agency instructions and specifications
- OEM-approved materials required to remove and replace SRS components
- two different vehicles requiring SRS replacement
- tools, equipment and materials appropriate for removing and replacing vehicle SRS.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTA003 Inspect vehicle paint, trim and accessories and recommend repair procedures

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect vehicle paint, trim and accessories and make recommendations regarding suitable repair or replacement procedures. It involves preparing for the task, inspecting the technical quality of repair work, recommending repair and rectification options, completing a written report at the request of either the customer or the repairer, and completing workplace processes and other documentation.

It applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for vehicle inspection	1.1 Job requirements are determined from workplace instructions 1.2 Vehicle component specifications are sourced and interpreted from original equipment manufacturer (OEM) or authorised agency and workplace procedures 1.3 Vehicle to be inspected is located, checked and confirmed against vehicle information in workplace instructions 1.4 ***Inspection methods*** are determined and most appropriate option for vehicle and job requirement is selected 1.5 Hazards associated with the work are identified and risks are managed 1.6 Materials and equipment required to conduct inspection are sourced and prepared
2. Inspect vehicle paint, trim and accessories	2.1 Vehicle paint, trim and accessories are inspected to determine damage or faults following workplace procedures and ***safety requirements*** 2.2 Vehicle inspection is completed without causing damage to vehicle or components 2.3 Inspection findings are recorded accurately according to workplace procedures
3. Complete work processes	3.1 Repair options and rectification action are determined and noted in workplace documentation 3.2 Final report identifying repair requirements, including in-house and sublet requirements and recommended repair methods, is prepared according to workplace procedures 3.3 Final report is checked for accuracy and completeness and submitted for processing according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately complete inspection and rectification reports outlining repair recommendations, and parts and material required.
Oral communication skills to:	• clarify instructions and ask questions to gather information • convey inspection findings and repair recommendations.
Numeracy skills to:	• interpret repair and vehicle specifications correctly using metric and imperial systems of measurement • compare measurements of parts and components to determine compliance with specifications • interpret specialised measuring equipment and calibrate equipment scales.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use business technology, including cameras, to complete reporting tasks.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Inspection method must include:	• visual checking • measuring.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE)
	  • using hand tools and lifting equipment.

Unit Mapping Information

Equivalent to AURVTA3003 Inspect paint, trim and accessories and recommend repair procedures

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTA003 Inspect vehicle paint, trim and accessories and recommend repair procedures

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and recommend repair procedures for two different vehicles covering:
  - vehicle paint
  - vehicle trim
  - vehicle accessories.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting vehicle paint, trim and accessories, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using hand tools and lifting equipment
- original equipment manufacturer (OEM) or authorised agency repair specifications
- inspection and repair procedures for vehicle paint, trim and accessories, including:
  - paint condition, including:
    - damage
    - fading
    - non-matching
  - trim condition, including wear and damage
  - accessories, including damage and improper operation
- workplace repair quality requirements
- post-inspection procedures, including preparation of repair report.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have inspected, e.g. inspection and/or rectification reports.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required to inspect vehicles
- a range of vehicles to inspect with unsatisfactory paint, trim and accessories
- workplace vehicle inspection procedures
- OEM or authorised agency repair specifications
- tools, equipment and materials appropriate for inspecting vehicle paint, trim and accessories.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTA005 Clean vehicles

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to clean a vehicle. It requires the learner to plan and prepare the task; clean the vehicle interior, exterior and engine bay; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to clean vehicle	1.1 ***Safety and environmental requirements*** are sourced and interpreted 1.2 ***Vehicle*** to be worked on is identified and manufacturer

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ELEMENTS	PERFORMANCE CRITERIA
	specifications and workplace procedures for vehicle cleaning are sourced and interpreted 1.3 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.4 ***Tools and equipment*** required for vehicle cleaning are identified according to manufacturer specifications
2. Clean vehicle interior and fittings	2.1 Tools, equipment and materials are selected and checked according to manufacturer specifications and workplace procedures 2.2 Vehicle is prepared prior to cleaning interior and fittings according to safety and environmental requirements 2.3 ***Interior surfaces*** are cleaned and vacuumed using correct cleaning materials and equipment, without causing damage to components, tools or equipment
3. Clean vehicle exterior and fittings	3.1 Tools, equipment and materials are selected and checked according to manufacturer specifications 3.2 Vehicle is prepared prior to cleaning exterior and fittings according to safety and environmental requirements 3.3 Vehicle exterior and fittings are cleaned using correct techniques and without causing damage to components, tools or equipment
4. Clean engine bay	4.1 Tools, equipment and materials are selected and checked according to manufacturer specifications and workplace procedures 4.2 Vehicle is prepared prior to cleaning engine bay according to safety and environmental requirements 4.3 Electronic components and electrical connections are protected from water ingress 4.4 Engine bay is cleaned without causing damage to components, tools or equipment
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace standards and vehicle is presented ready for use or storage according to workplace procedures 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 5.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported where necessary 5.4 Problems with cleaning equipment or tools are reported according to workplace procedures

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ELEMENTS	PERFORMANCE CRITERIA
	5.5 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures for cleaning a vehicle • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate ratios and amounts of cleaning products.
Planning and organising skills to:	• plan own work requirements and prioritise actions to complete the vehicle cleaning task.
Self-management skills to:	• recognise own limitations when selecting and using tools and equipment and seek timely advice.
Problem-solving skills to:	• identify potential or actual hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.
Technology skills to:	• set up and operate equipment and tools required to clean a vehicle.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
	  • use of personal protective equipment, including safety glasses, ear protection, gloves and safety footwear
	  • applying procedures for preventing waste water from entering storm water systems.

Vehicle must include one or more of the following:	• passenger motor vehicle • light commercial • heavy vehicle • motor cycle • constructed vehicle.
Tools and equipment must include:	• hoses and washing equipment • chemicals and cleaning solutions • polishing equipment.
Interior surfaces must include:	• cloth • glass • leather.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTA005 Clean vehicles

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria and foundation skills:

- safely and correctly clean a minimum of two different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - personal protective equipment, including safety glasses, gloves, ear protection and safety footwear
  - operation of equipment and tools, including pressurised hoses
  - safety data sheets (SDS) and types, use and location of cleaning products
  - procedures for preventing waste water from entering storm water system
  - disposal of chemicals, oil and rubbish
- identification and location of vehicle components, including:
  - engine bay
  - engine electrical components
  - interior and exterior fittings
- types of vehicle body finishes
- vehicle cleaning procedures, including:
  - types, application and use of vehicle cleaning areas and vehicle bays
  - types, application and use of cleaning equipment and materials
  - component protection procedures, including:
    - protection of engine bay air intake and electrical and electronic components
    - protection of body electrical components
  - vehicle interior, exterior, fitting and engine bay cleaning procedures
  - cloth and leather interior surfaces cleaning procedures

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  - chrome and polished alloy wheels cleaning procedures
- clean-up and maintenance requirements for vehicle cleaning area.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have cleaned, e.g. job card.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- personal protective equipment appropriate to the workplace
- a minimum of two different vehicles with cloth, glass and leather interior components, requiring cleaning
- vehicle cleaning tools, equipment and materials, including:
  - hoses and washing equipment
  - chemicals and cleaning solutions
  - polishing equipment
- vehicle cleaning area.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTG006 Apply vehicle window tinting

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to prepare various glass surfaces of vehicles and apply window tinting material. It involves preparing for the task, selecting and using specialist tools and equipment, producing templates according to window size and shape, cutting tint film, installing tint film on glass surface according to workplace procedures, cleaning and finishing window, and completing workplace processes and documentation.

It applies to those working in the automotive glazing service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Glazing

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for window tinting	1.1 Job requirements are determined from workplace instructions 1.2 Information is accessed and interpreted from window tinting manufacturer specifications, workplace procedures, and relevant safety data sheets (SDS) 1.3 Work is planned to minimise waste and use time efficiently 1.4 Vehicles requiring window tint are identified, sourced and inspected to ensure no prior damage and that related accessories are operating correctly 1.5 Window tinting materials are selected and checked for quality 1.6 Hazards associated with the work are identified and risks are managed 1.7 Application ***tools and equipment*** are selected and checked for serviceability 1.8 Vehicle is protected and safely located according to workplace procedures
2. Measure and cut tinting material and templates	2.1 ***Glass surfaces*** are measured accurately in order to prepare templates 2.2 Templates are cut according to workplace procedures and ***safety and environmental requirements*** 2.3 Window tinting materials are cut according to templates and without causing damage to vehicle or components
3. Prepare surfaces and apply window tinting material	3.1 Surface preparation is carried out using approved methods and materials according to window tinting manufacturer specifications 3.2 Window tinting material is applied correctly following window tinting manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 3.3 Window tint is inspected for faults according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations, related accessories are operating correctly, and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues, faults and outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to:
	  • calculate quantities of window tint materials
	  • measure and cut templates to specifications
	  • accurately mark and cut tinting film material.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• determine causes of defects in application.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Tools and equipment must include:	• personal protective equipment (PPE) • measuring equipment • cutting equipment • hand and power tools.
Glass surfaces must include:	• flat fixed glass • curved fixed glass • movable glass.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using tools and equipment
	  • using SDS for window tint film
	  • material handling and storage
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTG2006 Apply window tinting

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTG006 Apply vehicle window tinting

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- apply window tinting film to three different vehicles, including to:
  - flat fixed glass
  - curved fixed glass
  - movable glass.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to applying vehicle window tinting, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and equipment
  - using safety data sheets (SDS) for window tint film
  - material handling and storage
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- methods and techniques for window tinting, including:
  - tinting materials, including:
    - regulations
    - types
  - measuring windows and producing templates appropriate to window size and shape
  - measuring and cutting tint film

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  - glass surface preparation procedures, including removal of damaged tint
  - application methods and techniques for:
    - flat fixed glass
    - curved fixed glass
    - movable glass
  - window tinting material storage procedures
- procedures for protecting vehicle and components during window tinting work
- procedures for final inspection of applied window tinting.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle window tinting they have applied, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive glazing workplace, off-site workplace location or simulated workplace
- SDS for window tint film
- workplace instructions
- PPE required to cut and apply window tinting
- three different vehicles requiring window tinting to be fitted to the glass specified in the performance evidence
- window tinting film
- tools, equipment and materials appropriate for applying vehicle window tinting.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTG007 Clean vehicle glass surfaces

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to prepare and clean vehicles' internal and external glass surfaces to remove visible dirt and grime. It involves preparing for the task, selecting and using cleaning products, cleaning glass surfaces to workplace standards, and completing workplace processes and documentation.

It applies to those working in the automotive detailing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Glazing

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for glass cleaning	1.1 Job requirements are determined from workplace instructions 1.2 ***Glass cleaning materials and equipment*** are selected and prepared

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	according to manufacturer instructions and workplace procedures 1.3 Safety data sheets (SDS) for glass cleaning fluids and materials are sourced and interpreted 1.4 Vehicle is inspected to ensure there is no prior damage 1.5 Work is planned to minimise waste and use time efficiently 1.6 Work area is prepared to allow cleaning activities to take place according to workplace procedures 1.7 Hazards associated with the work are identified and risks are managed 1.8 Vehicle is protected and safely located according to workplace procedures
2. Carry out glass cleaning activities	2.1 Glass cleaning procedures are carried out using approved materials, methods and equipment according to workplace procedures and ***safety and environmental requirements*** 2.2 Glass cleaning fluids are applied without causing damage to vehicle or components 2.3 Glass cleaning fluids are removed using lint-free cloths or paper towelling 2.4 Glass surfaces are finished according to workplace procedures and quality standards
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectation and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues, faults and outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division to determine mixing ratios of cleaning solutions.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Glass cleaning materials and equipment must include:	• personal protective equipment (PPE) • lint-free cleaning cloths or paper towelling • glass cleaning fluids • chamois.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using tools and equipment
	  • using SDS for cleaning products
	  • handling and storing cleaning material
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials and cleaning chemicals.

Unit Mapping Information

Equivalent to AURVTG2007 Clean glass surfaces

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTG007 Clean vehicle glass surfaces

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- clean the internal and external body glass and windscreens of three different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to cleaning vehicle glass surfaces, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and equipment
  - using safety data sheets (SDS) for cleaning products
  - handling and storing cleaning material
- environmental requirements, including procedures for trapping, storing and disposing of waste materials and cleaning chemicals
- methods and techniques for cleaning glass surfaces, including:
  - cleaning materials and equipment
  - glass cleaning equipment safety requirements
  - glass cleaning methods and techniques
- procedures for protecting vehicle and components when cleaning glass surfaces
- procedures for final inspection of cleaned glass surfaces.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle glass surfaces that they have cleaned, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- SDS for cleaning products
- PPE required to clean vehicle glass surfaces
- materials to clean vehicle internal and external glass surfaces
- three different vehicles requiring internal and external glass cleaning
- tools and equipment appropriate for cleaning vehicle glass surfaces.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTG008 Cut and process vehicle and machinery flat laminated glass

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to measure, mark, cut and process flat laminated glass for installation into vehicles and machinery. It involves preparing for the task, selecting and using specialist tools and equipment, producing templates according to size, cutting flat laminated glass and finishing glass edges to given specifications, and completing workplace processes and documentation.

It applies to those working in the automotive glazing service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Glazing

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to cut and process flat laminated glass	1.1 Job requirements are determined from workplace instructions 1.2 Information is accessed and interpreted from laminated glass supplier specifications 1.3 Laminated glass is sourced according to work order and job specifications and checked for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 ***Glass cutting equipment*** and personal protective equipment (PPE) are selected and checked for serviceability 1.6 Work is planned to minimise off-cuts and use time efficiently
2. Fabricate templates and patterns	2.1 Accurate measurements are taken or checked to prepare templates and patterns 2.2 Suitable materials and equipment are used to fabricate templates and patterns 2.3 Template and pattern are marked out and fabricated according to workplace instructions, workplace procedures, and ***safety and environmental requirements***
3. Process glass	3.1 Glass is measured, marked and cut out according to measurements, template and pattern, and safety and environmental requirements 3.2 Glass cutting is completed according to workplace procedures, and safety and environmental requirements, and without causing damage to glass being cut 3.3 Glass edges are arris or bevel edged according to workplace procedures, and safety and environmental requirements, and without causing damage to glass
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately complete glass cutting plan and other workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues or outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition, subtraction and multiplication to:
	  • correctly measure templates, patterns and laminated glass components to specifications
	  • calculate glass requirements and quantities.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify quality issues in cut laminated glass.
Technology skills to:	• use specialist tools and measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Glass cutting equipment must include**:**	• measuring equipment • glass templates and patterns • tools for grinding and polishing edges • hand and power tools.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using tools and equipment

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	• using safety data sheets (SDS) for laminated glass • material handling and storage • environmental requirements, including procedures for trapping, storing and disposing of waste material.

Unit Mapping Information

Equivalent to AURVTG3008 Cut and process flat laminated glass

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTG008 Cut and process vehicle and machinery flat laminated glass

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- mark, cut, process and finish two different flat laminated glass sections, including:
  - one arris finish
  - one bevel edge.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to cutting and processing vehicle and machinery flat laminated glass, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and equipment
  - using safety data sheets (SDS) for laminated glass
  - material handling and storage
- environmental requirements, including procedures for trapping, storing and disposing of waste material
- methods and procedures for cutting and processing flat laminated glass, including:
  - manufacturer technical information and specifications
  - template and pattern fabrication
  - different template materials
  - measuring and marking out procedures
  - glass handling and storage processes
  - glass cutting methods and techniques

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  - use of glass cutting and arrising equipment
  - type and use of specialist tools and equipment
  - workplace glass cutting quality standards
  - cleaning materials and techniques
- procedures for final inspection of cut flat laminated glass.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the flat laminated glass that they prepared and cut, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive glazing workplace, off-site workplace location or simulated workplace
- workplace instructions
- SDS for laminated glass
- template and pattern specifications
- PPE required to cut laminated glass
- template materials
- flat laminated glass sheets as specified in the performance evidence
- tools and equipment appropriate for cutting and processing flat laminated glass.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTG011 Install side vehicle windows

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to fabricate templates for vehicle side windows, mark and cut panels, prepare cut edges, cut glass or perspex, and install the side windows. It involves preparing for the task, selecting and using specialist tools and equipment, selecting materials, checking material quality, sealing and installing side windows according to manufacturer specifications, cleaning and finishing the windows, and completing workplace processes and documentation.

It applies to those working in the automotive glazing service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Glazing

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install side window	1.1 Job requirements are determined from workplace instructions 1.2 Information is accessed and interpreted from manufacturer specifications, workplace procedures, and sealant safety data sheets (SDS) 1.3 Work is planned to minimise waste and use time efficiently 1.4 Vehicle is inspected to ensure there is no prior damage and that all related accessories are operating correctly 1.5 ***Materials*** required to install side window are selected and checked for quality 1.6 Hazards associated with the work are identified and risks are managed 1.7 ***Tools and equipment*** for making opening and installing side window are selected and checked for serviceability 1.8 Vehicle is protected and safely located according to workplace procedures
2. Fabricate templates	2.1 Accurate measurements of shape and size of side window are taken in order to prepare templates 2.2 Suitable materials and equipment are used to fabricate templates 2.3 Templates are completed according to workplace procedures and without causing damage to vehicle or components
3. Mark out and cut panel for side window	3.1 Template is used to mark out areas on vehicle to be cut 3.2 Window opening is cut in panel using approved methods and equipment according to workplace procedures and ***safety and environmental requirements*** 3.3 Panel edges and trim are prepared for installation of side window 3.4 Panels and trim are reinforced as required to comply with vehicle manufacturer specifications and without causing damage to vehicle or components
4. Install side window	4.1 Material to be installed in vehicle side opening is selected and prepared 4.2 Side window is installed to manufacturer specifications using either rubber or direct glazing according to safety and environmental requirements 4.3 Window in panel opening is secured using approved materials
5. Complete work processes	5.1 Final inspection is made to ensure work meets workplace expectations, related accessories are operating correctly, customer is informed of time to wait before driving vehicle, and

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	vehicle is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 5.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues or outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to:
	  • calculate template and panel measurements
	  • cut opening.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify quality issues, reinforcement requirements and potential problems associated with cutting opening and installing side windows.
Technology skills to:	• use specialist tools and measuring equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Materials must include**:**	• side window • panel material • template materials • trim • sealants and adhesives • cleaning agents.
Tools and equipment must include:	• personal protective equipment (PPE) • hand and power tools • measuring equipment • metal cutting equipment • vehicle protection equipment • templates.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using tools and lifting equipment
	  • using SDS for sealants
	  • material handling and storage
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials and chemicals.

Unit Mapping Information

Equivalent to AURVTG3011 Install side windows

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTG011 Install side vehicle windows

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- install side windows in two different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing side vehicle windows, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and lifting equipment
  - using safety data sheets (SDS) for sealants
  - material handling and storage
- environmental requirements, including procedures for trapping, storing and disposing of waste materials and chemicals
- location and content of side window manufacturer technical information and specifications
- side window installation methods and techniques, including:
  - template production
  - template materials
  - measuring and marking out procedures
  - procedures for cutting windows and panels
  - side window installation procedures
  - type and use of specialist tools and equipment
  - glass and material handling techniques

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  - type of adhesives and sealants and their application
  - potential problems and consequences
  - cleaning materials and techniques
- procedures for protecting vehicle and components when installing side vehicle windows
- procedures for final inspection of fitted side windows.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle side windows they have installed, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive glazing workplace, off-site workplace location or simulated workplace
- workplace instructions
- PPE to be used when installing side windows
- SDS for sealants
- template materials
- metal cutting equipment, and hand and power tools to cut and install side windows
- two different vehicles requiring the installation of a side window
- side windows
- vehicle protection covers
- cleaning agents
- tools, equipment and materials appropriate for installing vehicle side windows.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTK001 Use and maintain vehicle body repair hand tools

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to select, use and maintain body repair hand tools in an automotive body repair workplace. It involves preparing for the task, identifying and using tools according to their operating procedures and maintenance requirements, and completing workplace processes and documentation.

It applies to those working in the automotive body service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Tools and Equipment

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Select and use body repair hand tools	1.1 Job requirements are determined from workplace instructions 1.2 Tools are selected to meet job requirements

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Tools are checked for serviceability according to workplace procedures and manufacturer requirements 1.4 Personal protective equipment (PPE) suitable for tools to be used is selected and checked for serviceability 1.5 Tools, including PPE, are used according to manufacturer procedures and ***safety requirements***
2. Service, maintain and store body repair hand tools	2.1 Tools are serviced, adjusted and maintained according to workplace and manufacturer schedules and procedures to ensure safe and accurate operation, within scope of own responsibility 2.2 Damaged or worn tools are tagged and removed from workplace and reported according to workplace procedures 2.3 Remaining tools and equipment are cleaned, checked and stored according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Reading skills to:	• interpret work health and safety (WHS) and occupational health and safety (OHS) procedures in workplace and manufacturer literature.
Writing skills to:	• legibly and accurately tag faulty tools and equipment • complete tool and equipment service and maintenance schedules.
Numeracy skills to:	• identify different size metric and imperial tools • understand the progression of fractions in imperial tools • adjust settings on tools.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • selecting and using PPE • using vehicle body repair hand tools.

Unit Mapping Information

Equivalent to AURVTK2001 Use and maintain vehicle body repair hand tools

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTK001 Use and maintain vehicle body repair hand tools

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- use and maintain body repair hand tools to complete three different minor vehicle body repairs.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to using and maintaining vehicle body repair hand tools, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using vehicle body repair hand tools
- types, characteristics, uses and limitations of vehicle body repair hand tools, including:
  - application and operation
  - hazards and control measures
  - manufacturer specifications relating to operating procedures and maintenance requirements for the tools
- procedures for selecting tools
- procedures for identifying and tagging faulty tools
- basic maintenance and storage procedures for tools.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the use and maintenance of body repair tools in an automotive repair workplace, e.g. equipment maintenance program.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- body repair hand tools to use and maintain
- PPE applicable to the tools
- vehicles, components or materials that require the use of tools specified in the performance evidence
- material relevant to maintaining body repair hand tools, including:
  - tool operating instructions and manuals
  - relevant tool adjusting or calibration equipment
  - tagging material.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN001 Remove and tag vehicle body components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify and tag a range of vehicle body components. It involves preparing for the work, removing and tagging body components by title, job number and application, and completing workplace processes and documentation.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive body repair industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and tag vehicle body components	1.1 Task instruction is interpreted and vehicle to be worked on is identified 1.2 Body component information is sourced and interpreted 1.3 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.4 Tools and equipment are selected and checked for serviceability
2. Remove components	2.1 Body components for removal are identified 2.2 Components are removed according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to components or systems 2.3 Removed components are inspected and findings recorded according to workplace procedures
3. Tag components	3.1 Tagging procedures are identified 3.2 Removed components are legibly ***tagged*** without causing damage and according to workplace procedures 3.3 Tagged components are stored according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instruction and workplace standards 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information.

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Skills	Description
Reading skills to:	• interpret key information from manufacturer specifications, safety requirements and workplace procedures relating to body components.
Writing skills to:	• legibly and accurately fill out tags and workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• interpret numerical information in task instructions and part numbers.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for selecting and using personal protective equipment (PPE) • environmental requirements, including procedures for trapping, storing and disposing of waste produced during the body component removal process.
Tagged must include**:**	• component title • component condition • job number.

Unit Mapping Information

Equivalent to AURVTN1001 Remove and tag vehicle body system components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN001 Remove and tag vehicle body components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and tag two of the following vehicle body components by title and application:
  - bumper bar
  - grille
  - door
  - door glass and handles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and tagging vehicle body components, including procedures for selecting and using personal protective equipment (PPE)
- environmental requirements, including procedures for trapping, storing and disposing of waste produced during the body component removal process
- identification and basic function of body components to be removed and tagged, including:
  - frames
  - bumper bars
  - grilles
  - doors
  - door glass and handles
- body component removal procedures
- body component tagging and storage procedures.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle body components that they have removed and tagged, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- vehicle with body components for removal as specified in the performance evidence
- tools, equipment and material appropriate for removing and tagging vehicle body components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN003 Remove and store vehicle body components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to perform pre-repair activities by removing and storing vehicle body components. It involves preparing for the task, selecting and using specialist tools and equipment, following workplace instructions in removing, tagging and storing body components as part of pre-repair requirements, and completing workplace processes and documentation.

It applies to those working in the automotive body service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
store vehicle body components	1.2 Workplace procedures and recommended procedures and specifications are sourced and interpreted from original equipment manufacturer (OEM) or authorised agency 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Tools and equipment***, including personal protective equipment (PPE), are selected and checked for serviceability 1.5 Work is planned to minimise waste according to workplace procedures
2. Remove, tag and store components	2.1 Vehicle components are removed according to specifications of OEM or authorised agency 2.2 Components are tagged and stored according to workplace procedures and without causing damage to system or components 2.3 Additional parts required to complete repair are identified, listed and reported
3. Clean components prior to repair and storage	3.1 Vehicle components are cleaned using recommended cleaning methods and materials according to ***safety and environmental requirements*** 3.2 Vehicle components are inspected for damage and repaired according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and components are presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures
Numeracy skills to:	• count vehicle body components and use basic mathematical operations including addition and subtraction, to compare and reconcile records of components.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include:	• hand and power tools • safety stands, jacks and lifting equipment • storage tabs and racks.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • manually handling and storing vehicle body components
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTN2003 Carry out pre-repair vehicle body operations

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN003 Remove and store vehicle body components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and store vehicle body components, accessories and parts on three different vehicles prior to their repair.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and storing vehicle body components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling and storing vehicle body components
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- original equipment manufacturer (OEM) or authorised agency procedures for removing and storing vehicle body components
- vehicle body component removal and storage methods and techniques, including:
  - types and use of tools and equipment
  - pre-repair work inspections
  - removal and storage practices
  - component tagging methods
  - procedures for protecting vehicle and components during removal and storage.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle body components that they have removed and stored, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required for pre-repairs
- three different vehicles with body components requiring removal and storage
- vehicle protection covers
- tools, equipment and material appropriate for removing and storing vehicle body components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN005 Remove and replace adhesive attached components on vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and replace adhesive attached components on vehicles. It involves preparing for the task, selecting and using tools and equipment, removing and replacing mouldings, badges, transfers and decals, selecting adhesives according to manufacturer specifications, and completing workplace processes and documentation.

It applies to those working in the automotive body service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and replace adhesive attached components on vehicles	1.1 Job requirements are determined from workplace instructions 1.2 Removal and replacement information for ***adhesive attached components*** is sourced and interpreted from manufacturer specifications and workplace procedures 1.3 Mouldings and decals are sourced and inspected for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including personal protective equipment (PPE), are identified and checked for serviceability 1.6 Work is planned and removal and replacement procedures are identified to prevent damage to vehicle
2. Remove adhesive attached components on vehicles	2.1 Removal of adhesive attached components is completed using approved equipment from manufacturer, including hot air guns 2.2 Reusable adhesive attached components are inspected and cleaned in preparation for replacement 2.3 Work is completed according to ***safety and environmental requirements*** and without causing damage to system and components, including adhesive attached components
3. Attach adhesive components on vehicles	3.1 Components to be replaced are checked and confirmed to be within manufacturer specifications 3.2 Adhesive is selected and applied according to ***product specification*** 3.3 Attached components are checked for fit and alignment, and to ensure that they are free of air bubbles
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues, defects and outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate adhesive ratio requirements • identify measurements, location and tolerances of adhesive attached components.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify defects and potential problems associated with removing and replacing adhesive attached components.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Adhesive attached components must include:	• protector mouldings • badges • transfers • decals • attachment clips.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using manual handling and storage techniques
	  • using tools and equipment

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	• handling and storing adhesives • environmental requirements, including procedures for trapping, storing and disposing of waste materials.
Application must include:	• attaching mouldings using two-way adhesive tape • attaching transfers and decals following product replacement instructions.
Product specification must include:	• type • method • application • thickness.

Unit Mapping Information

Equivalent to AURVTN2005 Remove and fit protector mouldings, transfers and decals

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN005 Remove and replace adhesive attached components on vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and replace three of the following adhesive attached components on vehicles:
  - protector mouldings
  - badges
  - transfers
  - decals.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and replacing adhesive attached components on vehicles, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using manual handling and storage techniques
  - using tools and equipment
  - handling and storing adhesives
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- methods and techniques for removing different types of adhesive attached components, including suitable removal methods and tools
- methods and techniques for replacing different types of adhesive attached components, including:
  - fastening methods: adhesive and mechanical methods

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  - types and application of adhesives
- procedures for final inspection of replaced adhesive attached components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the adhesive attached components they have removed and replaced on vehicles, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- vehicles requiring removal and replacement of adhesive attached components
- protector mouldings, transfers, badges and decals to be removed and replaced
- tools, equipment and materials appropriate for removing and replacing adhesive attached components, including:
- adhesive tape
- required PPE.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN006 Remove and replace mechanical units during vehicle repair

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and replace mechanical units and assemblies to facilitate vehicle body repair activities. It involves preparing for the task, selecting and using specialist tools and equipment, removing and replacing mechanical units according to original equipment manufacturer (OEM) procedures and workplace procedures, and completing workplace processes and documentation.

It applies to those working in the automotive body service and repair industry.

Assistance from licensed persons must be sought in relation to air conditioning, liquefied petroleum gas (LPG), or other alternative fuel systems and components.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and replace mechanical units	1.1 Job requirements are determined from workplace instructions 1.2 Removal and replacement specifications are sourced and interpreted from OEM and workplace procedures 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Tools, equipment*** and materials are selected and checked for serviceability 1.5 Vehicle and work area are prepared according to workplace procedures 1.6 Work is planned to identify methods, minimise waste and prevent damage to vehicle
2. Carry out removal and replacement activities	2.1 Mechanical units and assemblies are removed and replaced using approved procedures, hand tools and equipment and according to ***safety and environmental requirements*** 2.2 Assistance from licensed persons is sought when removing and replacing air conditioning, LPG, or other alternative fuel systems and components 2.3 Removal and replacement activities are completed according to OEM specifications and workplace procedures, and without causing damage to vehicle or components
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues, defects and outcomes.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify problems and avoid rework and waste.
Teamwork skills to:	• refer queries to and use strengths of appropriate personnel, including licensed persons, for vehicle systems as required.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include:	• personal protective equipment (PPE) • hand and power tools • jacking, support and lifting equipment.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • manual handling and storage techniques
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials and vehicle fluids released during process.

Unit Mapping Information

Equivalent to AURVTN2006 Remove and replace mechanical units and assemblies

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN006 Remove and replace mechanical units during vehicle repair

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and replace three of the following mechanical units on two different vehicles:
  - suspension parts and components
  - steering parts and components
  - final drive assembly
  - engine cross member or cradle
  - exhaust system
  - radiator.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and replacing mechanical units during vehicle repair, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manual handling and storage techniques
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials and vehicle fluids released during process
- types and layout of hard copy and electronic service and repair manuals, including from:
  - original equipment manufacturer (OEM)
  - component supplier
- removal and replacement procedures for mechanical units, including:

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    - correct use of tools, materials and safety equipment
    - removal and replacement methods and techniques
    - brake system fluids and bleeding processes, including anti-lock braking (ABS) systems
- types and functions of mechanical units, including:
    - suspension parts and components
    - steering parts and components
    - final drive assembly
    - engine cross member and cradle
    - exhaust system
    - radiator
- licence requirements associated with removal procedures, including:
    - air conditioning requirements
    - liquefied petroleum gas (LPG) requirements
- procedures for final inspection of fitted mechanical units.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the mechanical units and assemblies that they have removed and replaced during vehicle repair, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- OEM specifications for mechanical units
- two different vehicles requiring the mechanical units specified in the performance evidence to be removed and replaced
- tools, equipment and materials appropriate for removing and replacing mechanical units, including required PPE.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN007 Remove and clean salvageable vehicle components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to inspect and remove salvageable vehicle components and present for sale. It involves preparing for the task, selecting and using specialist tools and equipment, identifying salvageable components, removing salvageable components according to manufacturer specifications, cleaning and tagging the components for sale, and completing workplace processes and documentation.

It applies to those working in the automotive parts recycling industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
salvageable components	1.2 Manufacturer specifications and workplace procedures for removing salvageable components are sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Tools and equipment*** are identified and checked for serviceability 1.5 Work is planned to identify ***removal processes***, prevent damage to components, and use time efficiently
2. Remove, clean and prepare salvageable components for sale	2.1 Salvageable components are removed from vehicle according to established removal process, manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 2.2 Components are cleaned, labelled and prepared for sale according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and salvageable components are presented ready for sale 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues or outcomes.

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Skills	Description
Numeracy skills to:	• identify salvageable component part numbers • interpret salvageable component labels and part lists • use basic mathematical operations, including addition, subtraction, to calculate and record quantities of components and parts accurately.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include**:**	• hand and power tools • safety equipment, including personal protective equipment (PPE).
Removal processes must include**:**	• inspecting vehicle components • deciding on salvageable components and items • using removal techniques suitable for salvageable components and items.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • manually handling and storing vehicle components
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials and vehicle fluids released during the process.

Unit Mapping Information

Equivalent to AURVTN2007 Remove salvageable components

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN007 Remove and clean salvageable vehicle components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove, clean and prepare salvageable components for sale from three different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and cleaning salvageable vehicle components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling and storing vehicle components
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials and vehicle fluids released during the process
- types, location and content of hard copy and electronic manufacturer service and repair manuals
- techniques and methods for removing salvageable components, including:
  - removal, cleaning and presentation methods and techniques
  - component cleaning materials
  - procedures for inspecting components
  - procedures for preparing and labelling components for sale
- cleaning methods, materials and equipment required to prepare components.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle components they have salvaged, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer service and repair manuals
- three different vehicles with salvageable components for removal
- tools, equipment and materials appropriate for removing salvageable components, including:
  - component labels
  - component cleaning materials
  - required PPE.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN008 Clean vehicle body and door openings

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to wash vehicle body exteriors and clean door, hatch and boot openings. It involves preparing for the task, selecting and using cleaning equipment, cleaning and finishing products according to workplace instructions, and completing workplace processes and documentation.

It applies to those working in the automotive detailing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to clean vehicle body and door openings	1.1 Job requirements are determined from workplace instructions 1.2 Vehicle manufacturer’s recommended cleaning methods,

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	workplace procedures, and cleaning material safety data sheets (SDS) are sourced and interpreted 1.3 Cleaning products are selected and inspected for quality and suitability 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including personal protective equipment (PPE), are identified and inspected for serviceability 1.6 Work is planned to identify cleaning methods, minimise waste, and prevent damage to vehicle
2. Wash and clean vehicle	2.1 Vehicle body exterior is washed and cleaned according to workplace procedures and customer requirements 2.2 Vehicle openings, bonnet surrounds, and sill panels are washed and cleaned according to workplace procedures and customer requirements 2.3 Equipment and cleaning and protection products are used according to vehicle manufacturer recommendations, workplace procedures, and ***safety and environmental requirements*** 2.4 Washing and cleaning are completed according to workplace procedures and environmental requirements, and without causing damage to vehicle electrical and fuel components
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues or outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate ratios for dilution rates.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using tools and equipment
	  • using SDS for cleaning products
	  • handling and storing cleaning material
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials and cleaning chemicals.

Unit Mapping Information

Equivalent to AURVTN2008 Clean vehicle body and door cavities

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN008 Clean vehicle body and door openings

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- wash and clean vehicle b**o**dy and door openings on six different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to cleaning vehicle body and door openings, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and equipment
  - using safety data sheets (SDS) for cleaning products
  - handling and storing cleaning material
- environmental requirements, including procedures for trapping, storing and disposing of waste materials and cleaning chemicals
- methods and techniques for:
  - preparing and applying detailing and cleaning products
  - using cleaning and washing equipment
- methods for protecting vehicles while cleaning vehicle body exterior and door openings
- procedures for final inspection of vehicle body and door openings.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have cleaned, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive detailing workplace or simulated workplace
- workplace instructions
- SDS for cleaning products
- six different vehicles requiring cleaning and detailing
- tools, equipment and materials appropriate for cleaning vehicle body and door openings, including:
  - cleaning materials required to wash and clean vehicle bodies
  - required PPE.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN009 Clean vehicle engines and engine components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to wash and clean vehicle engines, engine bays and components. It involves preparing for the task, selecting and using cleaning equipment and materials, protecting engine components during cleaning process, and completing workplace processes and documentation.

It applies to those working in the automotive detailing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to clean vehicle engine and engine bay	1.1 Job requirements are determined from workplace instructions 1.2 Manufacturer recommended cleaning methods, workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures and cleaning material safety data sheets (SDS) are sourced and interpreted 1.3 Cleaning materials are selected, inspected for quality and suitability, and required quantities are calculated 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.6 Work is planned to identify cleaning methods, minimise waste, and prevent damage to vehicle
2. Wash and clean engine and components	2.1 Cleaning materials, tools and equipment are used according to manufacturer recommended cleaning methods, workplace procedures, and ***safety and environmental requirements*** 2.2 Engine, components and engine bay are washed and cleaned according to workplace procedures and customer requirements 2.3 ***Components*** are protected according to workplace instructions, and washing and cleaning are completed without causing damage to vehicle or engine 2.4 Engine, components and engine bay are dried according to workplace procedures 2.5 Engine and components are inspected and tested to ensure normal operation after the washing and drying process
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and engine is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues or outcomes.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using tools and equipment
	  • using SDS for cleaning products
	  • handling and storing cleaning material
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials and cleaning chemicals.

Components must include:	• electrical and electronic components • air induction inlets • fuel components.

Unit Mapping Information

Equivalent to AURVTN2009 Clean vehicle engine and engine compartment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN009 Clean vehicle engines and engine components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- clean vehicle engine, components and engine bay on three different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to cleaning vehicle engines and engine components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and equipment
  - using safety data sheets (SDS) for cleaning products
  - handling and storing cleaning material
- environmental requirements, including procedures for trapping, storing and disposing of waste materials and cleaning chemicals
- methods and techniques for cleaning vehicle engine, components and engine bay, including:
  - cleaning materials and their recommended applications
  - cleaning equipment type and correct use
  - washing and drying methods and procedures
- procedures for protecting vehicle electrical, electronic, air intake and fuel components during cleaning process
- procedures for final inspection of engine and engine components.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle engine and engine components that they have cleaned, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- PPE required to clean vehicle engine, components and engine bay
- SDS for cleaning products
- materials required to wash and clean engine, components and engine bay
- three different vehicles requiring their engine, components and engine bay to be cleaned
- tools, equipment and materials appropriate for washing and cleaning engines, components and engine bay.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN010 Clean vehicle underbody

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to wash, clean and dry a vehicle underbody and its components. It involves preparing for the task, selecting and using cleaning equipment, cleaning products and materials, protecting underbody components during cleaning process, and completing workplace processes and documentation.

It applies to those working in the automotive detailing industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to clean vehicle	1.1 Job requirements are determined from workplace instructions 1.2 Manufacturer recommended cleaning methods, workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
underbody	procedures, and cleaning material safety data sheets (SDS) are sourced and interpreted 1.3 Cleaning materials are selected, inspected for quality and suitability, and required quantities are calculated 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.6 Work is planned to identify cleaning methods, minimise waste, and prevent damage to vehicle
2. Wash and clean vehicle underbody	2.1 Cleaning tools, equipment and underbody component protective products are used according to workplace procedures and ***safety and environmental requirements*** 2.2 Vehicle underbody and components are washed and cleaned according to manufacturer recommended methods, and without causing damage to vehicle's electrical or mechanical components or systems 2.3 Washing and cleaning are completed according to customer requirements, workplace procedures, and safety and environmental requirements
3. Dry vehicle underbody components	3.1 Drying processes and equipment are selected and used according to workplace procedures and customer requirements 3.2 Vehicle underbody and components are dried according to workplace procedures, manufacturer recommended methods and customer requirements, and without causing damage to system or components 3.3 Vehicle unit and system components are inspected and tested to ensure normal operation after the washing and drying process
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues or outcomes.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using tools and equipment
	  • using SDS for cleaning products
	  • handling and storing cleaning material
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials and cleaning chemicals.

Unit Mapping Information

Equivalent to AURVTN2010 Clean vehicle underbody

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN010 Clean vehicle underbody

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- clean vehicle underbody and components on three different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to cleaning vehicle underbody, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and equipment
  - using safety data sheets (SDS) for cleaning products
  - handling and storing cleaning material
- environmental requirements, including procedures for trapping, storing and disposing of waste materials and cleaning chemicals
- methods and techniques for cleaning vehicle underbody and components, including:
  - cleaning products and materials and their recommended applications
  - cleaning equipment type and correct use
  - washing and cleaning methods and procedures
  - drying methods and procedures
- procedures for protecting vehicle electrical and mechanical components and systems during cleaning process
- procedures for final inspection and test procedures prior to vehicle handover.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle underbodies that they have cleaned, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive detailing workplace or simulated workplace
- workplace instructions
- PPE required to clean vehicle underbodies
- SDS for cleaning products
- materials required to wash and clean vehicle underbodies and components
- three different vehicles requiring underbody and components to be cleaned
- tools, equipment and materials appropriate for cleaning and drying vehicle underbodies.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN012 Install vehicle sunroofs

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to position and install sunroofs in vehicles or machinery. It involves preparing for the task, selecting and using tools and equipment, developing and preparing templates, marking out and cutting roof panels, preparing cut edges, installing, sealing and finishing sunroof to manufacturer specifications, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to install	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
vehicle sunroof	1.2 Sunroof installation information is sourced and interpreted from manufacturer and original equipment manufacturer (OEM) specifications and workplace procedures 1.3 Sunroof and ***materials*** are sourced and inspected for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 ***Tools and equipment*** are sourced and checked for serviceability 1.6 Work is planned to identify suitable installation methods, minimise waste, and prevent damage to vehicle
2. Fabricate template for sunroof	2.1 Suitable template materials are selected 2.2 Template is fabricated according to sunroof specifications and workplace procedures
3. Mark out and cut roof panels, and prepare cut edges	3.1 Accurate measurements are taken and template is used to mark out roof area to be cut 3.2 Roof panels are cut and trimmed using approved methods and equipment, including vehicle protection equipment, and according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements*** 3.3 Cut edges are filed and prepared for sunroof installation 3.4 Cut roof panel is reinforced according to OEM or approved agency's structural requirements 3.5 Marking out and cutting are completed without causing damage to vehicle or components
4. Install sunroof	4.1 Sunroof is lifted into place without causing damage to vehicle or components 4.2 Sunroof fit is installed and checked prior to sealing 4.3 Sunroof is sealed according to manufacturer specifications 4.4 Installed sunroof is checked for safe operation and is leak tested
5. Complete work processes	5.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 5.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues or outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to measure and mark out templates, panel and trim sections.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify defects or quality issues, reinforcement requirements, and potential problems associated with installing sunroofs.
Technology skills to:	• use specialist tools and measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Materials must include:	• sunroof • templates • adhesives and sealants • fasteners • cleaning materials.
Tools and equipment must include**:**	• personal protective equipment (PPE) • measuring equipment • marking out equipment • metal or panel cutting equipment

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	• vehicle protection equipment.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • manually handling sunroofs
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTN3012 Install vehicle sunroofs

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN012 Install vehicle sunroofs

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance, range of conditions and foundation skills:

- install a sunroof to a vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing vehicle sunroofs, including procedures for:
  - selecting and using personal protecting equipment (PPE)
  - manually handling sunroofs
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- sunroof installation methods and techniques, including:
  - tools, equipment and materials to install vehicle sunroof
  - identifying sunroof specifications and fitting location
  - measuring and marking procedures prior to cutting vehicle roof and installing the sunroof
  - template fabrication techniques
  - panel and trim cutting procedures
  - panel reinforcing methods
- procedures for protecting vehicle and components when installing sunroofs
- procedures for final inspection and testing of fitted vehicle sunroof.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle sunroofs they have installed, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- sunroof installation instructions, methods and specifications
- materials to fabricate templates to sunroof specifications
- vehicle or frame requiring the installation of a sunroof
- vehicle sunroof
- tools, equipment and materials appropriate for installing vehicle sunroofs, including required PPE.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN017 Repair vehicle thermoplastic body panels and components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to repair vehicle interior and exterior thermoplastic panels and components. It involves preparing for the task, selecting and using specialist thermoplastic repair tools and materials, repairing thermoplastic components to pre-paint condition, and completing workplace processes and documentation.

It applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Vehicle - Body

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to repair	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
thermoplastic body panels and components	1.2 Original equipment manufacturer (OEM) or authorised agency's specifications for ***thermoplastic panel and component repairs*** and relevant safety data sheets (SDS) are sourced and interpreted 1.3 Repair method is selected, and materials are checked for quality and prepared 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including personal protective equipment (PPE), are identified and checked for serviceability 1.6 Work area is prepared and work is planned to minimise waste and use time efficiently
2. Carry out repair activities	2.1 Suitable thermoplastic welding, fusion techniques and adhesives, including adhesion promoter where applicable, are used to repair thermoplastic body panels and components according to ***safety and environmental requirements*** 2.2 Body filler that is formulated for the repaired thermoplastic is selected and used 2.3 Repairs are completed to pre-paint condition according to specifications of OEM or authorised agency and workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and thermoplastic body panels are presented ready for painting 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	**Description**
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues or outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate ratios for dilution rates.to:
	  • calculate repair material quantities
	  • measure surface area
	• take accurate measurements using measuring equipment.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist thermoplastic panel repair tools and measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Thermoplastic panel and component repairs must include:	• splits • tears • dents.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using SDS for thermoplastics
	  • manually handling body panels and components
	  • using tools and equipment, including dust and fume collection equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURVTN3017 Repair body panels and thermoplastic components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN017 Repair vehicle thermoplastic body panels and components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- repair vehicle thermoplastic body panels on four different vehicles, including:
  - two vehicle exterior thermoplastic panel components with a tear or dent
  - one thermoplastic panel component incorporating a flange and contour with a split of 100 mm
  - one interior or ornamental plastic trim component with a split, tear or dent.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing vehicle thermoplastic body panels and components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for thermoplastics
  - manually handling body panels and components
  - using tools and equipment, including dust and fume collection equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- original equipment manufacturer (OEM) or authorised agency repair specifications specific to the vehicles specified in the performance evidence
- thermoplastic repair procedures and techniques, including:
  - plastic material types
  - plastic repair tools and equipment

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  - plastic welding
  - plastic adhesives
  - repair quality requirements
- procedures and requirements for protecting vehicle and components during thermoplastic repair work
- procedures for final inspection of completed thermoplastic repairs.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle thermoplastic components that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace location or simulated workplace
- workplace instructions
- SDS for thermoplastics
- OEM or authorised agency repair specifications
- thermoplastic components specified in the performance evidence requiring repair
- tools, equipment and materials appropriate for repairing vehicle thermoplastic body panels and components, including required PPE.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN018 Repair and replace vehicle structural damage

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to repair the structural damage of vehicle body components using straightening and replacement techniques. It involves preparing for the task, selecting and using specialist tools and equipment, fitting, aligning and welding structural sections, finishing repairs to pre-paint condition, undertaking a final inspection of body repair work, and completing workplace processes and documentation.

It applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to repair and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
replace vehicle structural damage	1.2 ***Structural repair*** and replacement information is accessed and interpreted from original equipment manufacturer (OEM) or authorised agency's specifications 1.3 Materials for repair are selected and checked for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 ***Tools and equipment*** are selected and checked for serviceability 1.6 Work is planned to identify methods, minimise waste, and use time efficiently
2. Carry out structural straightening, realigning and welding procedures	2.1 Damaged components are removed as required, according to OEM or authorised agency's recommended procedures and equipment 2.2 Components are straightened using OEM or authorised agency's approved equipment and procedures 2.3 Repaired or replacement components are fitted and aligned, and measurements are checked against OEM or authorised agency's specifications 2.4 Repaired or replaced components are welded according to OEM or authorised agency's specifications, methods and equipment, and ***safety and environmental requirements*** 2.5 Assistance is sought from authorised personnel where straightening, realigning and welding of components disturb vehicle trim or electrical, mechanical or air conditioning systems
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and manufacturer specifications, and components are presented ready for painting 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues and non-conformance against specifications and job outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate repair tolerances • set welding equipment gas pressures.
Planning and organising skills to:	• prepare and lay out work area, equipment and materials • plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• refer problems outside area of responsibility to appropriate person.
Technology skills to:	• use specialist repair tools and welding equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Structural repair must include at least two of the following**:**	• body chassis rails and skirts • front or rear chassis rails • boot floors • upper skirt rail • inner or outer wheel arches • turrets • front and rear hinge pillars • inner and outer sill and pillar panels.
Tools and equipment must include:	• personal protective equipment (PPE) • hand and power tools and equipment • hydraulic or pneumatic push/pull equipment • OEM or authorised agency approved metal inert gas (MIG) and

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	spot welding equipment • OEM or authorised agency approved measuring equipment • underbody jigging systems.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • manually handling vehicle body components
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTN3018 Repair and replace structural damage by welding

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN018 Repair and replace vehicle structural damage

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- repair and replace structural body components on two different vehicles, in which each repair must include two of the following components:
  - body chassis rails and skirts
  - front or rear chassis rails
  - boot floors
  - upper skirt rail
  - inner or outer wheel arches
  - turrets
  - front and rear hinge pillars
  - inner and outer sill and pillar panels.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing and replacing vehicle structural damage, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling vehicle body components
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- different types of equipment and their use, including:
  - hydraulic and pneumatic straightening equipment

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  - approved metal inert gas (MIG) and spot welding equipment
  - recommended measuring equipment
- location and key features of original equipment manufacturer (OEM) or authorised agency approved repair instructions, specifications and quality standards
- structural repair methods and techniques, including:
  - straightening and realigning
  - body panel measuring
  - panel replacement
- procedures for protecting vehicle and components when repairing or replacing structural body damage
- procedures for final inspection of completed structural body component repairs.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have structurally repaired and welded, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- approved repair procedures and specifications of OEM or authorised agency
- two different damaged vehicles with components specified in the performance evidence requiring structural repairs
- tools, equipment and materials appropriate for repairing and replacing structurally damaged panels on vehicles, including:
  - PPE required to repair and weld structurally damaged sections
  - recommended measuring equipment
  - materials required to repair and replace structurally damaged panels
  - hydraulic and pneumatic straightening equipment

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- approved MIG and spot welding equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN021 Repair vehicle body components using lead wiping

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out lead wiping and lead filling repairs to damaged vehicle body components. It involves preparing for the task, selecting and using specialist tools and lead wiping equipment, cleaning and tinning metal surfaces, heating and applying lead and lead wiping to complete repairs, finishing repairs to pre-paint condition, and completing workplace processes and documentation.

It applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to repair body	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
components using lead wiping	1.2 Lead wiping ***materials*** are selected and checked for quality and safety data sheets (SDS) are identified and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Lead wiping tools and equipment*** and personal protective equipment (PPE) are identified and checked for serviceability 1.5 Work area is prepared and work is planned to minimise waste and use time efficiently
2. Apply lead wiping for repair	2.1 Metal on body panel to be repaired is cleaned thoroughly and prepared for tinning 2.2 Tinning paste is applied to metal surface according to product manufacturer specifications and workplace procedures 2.3 Body solder is heated to workable consistency and shaped using appropriate lead wiping tool 2.4 Lead wiping is carried out according to ***safety and environmental requirements*** 2.5 Repair area is filed using a body file and finished to pre-paint condition and workplace standards
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and components are presented ready for painting 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate specifications and relevant information efficiently.

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Skills	Description
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues or outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate quantities of materials needed for lead wiping.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify defects and potential problems associated with lead wiping.
Technology skills to:	• use lead wiping equipment and materials.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Materials must include**:**	• body solder • lead wiping fluxes • tinning paste.
Lead wiping tools and equipment must include:	• oxyacetylene plant • lead wiping tip • body file • specialist application tools.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using SDS for lead and tinning paste materials
	  • handling and storing fluxes and lead
	  • using lead wiping tools and equipment
	• environmental requirements, including procedures for:
	  • storing fluxes and lead
	  • trapping, storing and disposing of waste lead materials.

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Unit Mapping Information

Equivalent to AURVTN3021 Repair body components using lead wiping

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN021 Repair vehicle body components using lead wiping

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- complete a lead wiping repair on two different vehicle body components, including repairing one dent of a minimum size of 100 mm x 50 mm x 2 mm in depth.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing vehicle body components using lead wiping, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for lead and tinning paste materials
  - handling and storing fluxes and lead
  - using lead wiping tools and equipment
- environmental requirements, including procedures for:
  - storing fluxes and lead
  - trapping, storing and disposing of waste lead materials
- lead wiping methods and techniques, including:
  - use of lead wiping equipment and application tools
  - lead wiping materials
  - metal tinning processes
  - cleaning repaired area to prevent corrosion
- procedures for protecting vehicle and components during lead wiping repair work
- procedures for final inspection of lead wiped repair.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle body components they have repaired using lead wiping, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required for lead wiping
- SDS for lead and tinning paste materials
- materials for lead wiping repair of body components
- vehicle body components specified in the performance evidence requiring lead wiping repairs
- tools, equipment and materials appropriate for repairing vehicle body components using lead wiping.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN022 Repair vehicle body misalignment

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to repair vehicle misalignment. It involves preparing for the task, selecting and using specialist tools and equipment, setting up vehicle body measuring equipment, taking measurements, identifying and repairing vehicle body misalignment to pre-paint condition, and completing workplace processes and documentation.

It applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for work	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.2 Vehicle specifications, and original equipment manufacturer (OEM) or authorised agency's recommended repair procedures and methods, are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Tools and equipment*** are selected and checked for serviceability 1.5 Work area is prepared and work is planned to minimise waste and use time efficiently
2. Perform pre-repair measurements	2.1 Measuring equipment is selected, prepared and attached to the vehicle according to equipment manufacturer instructions and ***safety and environmental requirements*** 2.2 Pre-repair ***three-dimensional measurements*** are completed without causing damage to system or components, and extent of misalignment is identified and recorded 2.3 Results of measurements and visual and physical inspections are used to determine type of damage and misalignment repair required
3 .Repair misalignment	3.1 Misalignment is repaired using appropriate ***repair method*** 3.2 Misalignment repair is inspected and measured and results are checked against vehicle OEM or authorised agency's specifications and tolerances
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and manufacturer specifications, and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues or outcomes.
Numeracy skills to:	• set up equipment and identify repair measurements • use basic mathematical operations, including addition and subtraction, to calculate vehicle misalignments and tolerances.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist measuring and alignment equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include:	• personal protective equipment (PPE) • universal measuring, jigging and alignment bench system • repair hand and power tools • OEM or authorised agency's approved welding equipment and techniques • hydraulic or pneumatic repair equipment and fittings.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • manually handling measuring equipment
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Three-dimensional measurements must include:	• length • height • width.

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Repair method must include:	• hydraulic reforming • welding • mechanical fastening • riveting • removing and replacing components.

Unit Mapping Information

Equivalent to AURVTN3022 Repair vehicle body misalignment

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN022 Repair vehicle body misalignment

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- repair vehicle body misalignment, including two of the following sections:
  - vehicle front chassis section
  - rear panels and floor section
  - side sill and pillar section.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing vehicle body misalignment, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling measuring equipment
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- original equipment manufacturer (OEM) or authorised agency's recommended repair procedures for removing, replacing and realigning vehicle bodies
- following vehicle design characteristics and their implications for repair and realignment methods:
  - mono
  - unitised
  - chassis
  - space frame

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- types of misalignment damage, including:
  - under and upper body damage
  - sway
  - sag
  - twist
  - kick-up and kick-down
  - mash and diamond
- methods and techniques for identifying misalignment damage, including:
  - visual, mechanical and physical checking
  - use of measuring and alignment equipment
- repair techniques, including:
  - panel beating, welding, mechanical fastening, riveting, removing and aligning vehicle body sections
  - correct use of tools and equipment, including hydraulic or pneumatic repair equipment
  - digital and non-digital measuring equipment and dedicated jigs
  - welding techniques
  - hydraulic reforming
- procedures for final inspection of vehicle body misalignment repair.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle misalignments that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required to repair vehicle body misalignment

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- OEM or authorised agency repair procedures
- vehicle specifications
- welding equipment
- measuring system
- straightening equipment
- two misaligned vehicle body sections as specified in the performance evidence
- tools, equipment and materials appropriate for repairing vehicle misalignment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN023 Repair adhesive bonded structural damage on vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to repair bonded vehicle body panels and structures using an adhesive attachment method. It involves preparing for the task, selecting and using specialist tools and equipment, removing bonded structural damage, repairing panel sections, applying approved adhesives and realigning the structural repair, and completing workplace processes and documentation.

It applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to repair adhesive bonded structural damage	1.1 Job requirements are determined from workplace instructions 1.2 Original equipment manufacturer (OEM) or authorised agency's recommended bonding and repair procedures are accessed and interpreted 1.3 Adhesive specifications and application instructions, including safety data sheets (SDS), and bonding materials are selected and prepared 1.4 Hazards associated with the work are identified and risks are managed 1.5 Adhesive application ***tools and equipment*** and personal protective equipment (PPE) are selected and checked for serviceability 1.6 Work is planned to identify adhesive bonding methods, minimise waste, and use time efficiently
2. Remove and replace bonded sections	2.1 Replacement panels and components are checked against vehicle specifications and for quality 2.2 Bonded panels and structures are removed according to OEM procedures and without causing damage to system or components 2.3 Bonded panels and structures are repaired according to OEM procedures and stored until required 2.4 Bonded panels and structures are refitted using approved bonding methods, adhesives, materials and equipment according to OEM or authorised agency specifications, and ***safety and environmental requirements*** 2.5 Sealants are selected and applied according to OEM or authorised agency's specifications and workplace procedures 2.6 Bonded panels and structures are cleaned without causing damage to systems or components
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and manufacturer specifications, and bonded vehicle panels and structures are presented ready for painting 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues or outcomes.

Numeracy skills to:	• read tape measure and take accurate measurements
	• use basic mathematical operations, including addition, subtraction, multiplication and division, to:
	  • estimate surface area according to bonding instructions
	  • estimate adhesive curing times
	  • calculate quantities of required materials
	• interpret adhesive code, type and grade.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify quality issues and potential problems associated with repair of adhesive bonded structural damage.
Technology skills to:	• use specialist removal and installation equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include**:**	• adhesive application equipment • hand tool and securing clamps.
Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • selecting and using PPE

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	• using SDS for adhesives • manually handling vehicle panels • storing adhesives • using tools and equipment • environmental requirements, including procedures for trapping, storing and disposing of waste materials and adhesives.

Unit Mapping Information

Equivalent to AURVTN3023 Remove and replace adhesive bonded panels and structures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN023 Repair adhesive bonded structural damage on vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and replace bonded panels on two different vehicles, in which the work must include two of the following:
  - door skins
  - vehicle turret
  - quarter panel
  - boot floor section
- use the following bonding methods and securing techniques during above work:
  - welding and bonding
  - rivet or screwing and bonding.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing adhesive bonded structural damage on vehicles, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for adhesives
  - manual handling vehicle panels
  - storing adhesives
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials and adhesives

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- original equipment manufacturer (OEM) or authorised agency's recommended bonding procedures
- location and types of structural foams
- types of adhesives and their application methods and techniques
- removal and replacement techniques for bonded panels
- types of adhesive bonding methods
- securing techniques, including:
  - welding and bonding
  - rivet or screwing and bonding
- procedures for protecting vehicle and components when removing and replacing adhesive bonded panels
- procedures for final inspection of bonded structural repair.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to vehicle structural damage that they have repaired using adhesive bonding, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- OEM or authorised agency repair procedures
- PPE required to remove and replace adhesive bonded panels and structures
- SDS for adhesives
- vehicle specifications
- two different vehicles or frames with bonded panels requiring repair
- adhesives
- cleaning agents and materials
- tools, equipment and materials appropriate for repairing adhesive bonded panels.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN025 Repair corroded vehicle body panels and components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to repair vehicle body panels and components that have been damaged by corrosion. It involves preparing for the task, selecting and using specialist tools and equipment, removing corroded damage, fabricating replacement components, fitting and welding vehicle body components, finishing repairs to pre-paint condition, and completing workplace processes and documentation.

It applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to repair corroded panel sections	1.1 Job requirements are determined from workplace instructions 1.2 Repair material is selected and checked for quality 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Tools and equipment*** are selected and checked for serviceability 1.5 Work is planned to identify repair methods, minimise waste, and use time efficiently
2. Remove corroded sections	2.1 Corroded vehicle body panel and components are identified 2.2 Body section is assessed to determine appropriate repair method 2.3 Corroded panel is removed according to workplace procedures and ***safety and environmental requirements***, and without causing damage to vehicle or components 2.4 Assistance is sought from authorised personnel where removal of components disturbs vehicle trim or electrical, mechanical or air conditioning systems
3. Reform and replace corroded sections	3.1 Repair material is selected according to vehicle manufacturer specifications 3.2 Corroded panel section is measured and formed use forming equipment 3.3 Panel section is repaired or reformed using approved methods and equipment 3.4 Repaired corroded section is replaced, welded and finished 3.5 Replaced section is checked for compliance against vehicle manufacturer specifications
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and panel is presented ready for painting 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • discuss work that could potentially disturb trim or electrical, mechanical or air conditioning systems • clearly report issues or outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate:
	  • fitting measurements and tolerances
	  • quantities of required materials.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes • prepare vehicle, work area and replacement sections.
Problem solving skills to:	• identify quality issues and potential problems associated with repairing corroded vehicle body components.
Technology skills to:	• use specialist removal and repair equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include:	• personal protective equipment (PPE) • specialist hand tools • basic panel forming equipment • specialist welding equipment.

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Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • manually handling corroded vehicle body components
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTN3025 Repair corroded panels and components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN025 Repair corroded vehicle body panels and components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- repair two different corroded vehicle body panels and their components.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing corroded vehicle body panels and components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling corroded vehicle body components
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- repair methods and procedures, including:
  - corroded body panel measuring
  - pattern development of body component
  - use of forming equipment and materials
  - panel manufacture and forming
  - corroded panel replacement methods and techniques
  - corroded panel fitting, welding and finishing techniques
- procedures and requirements for protecting vehicle and components during repair work
- procedures for final inspection of fabricated and fitted vehicle body components.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the corroded body components that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required to repair corroded vehicle body panels and components
- materials required to repair corroded vehicle body panels and components
- two different corroded vehicle body panels and components requiring repair
- tools, equipment and materials appropriate for repairing corroded vehicle body panels and components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN028 Identify and repair high strength steel vehicle components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to locate, identify and repair high strength steel (HSS) vehicle components, including advanced and ultra-high strength steel. It involves preparing for the task, selecting and using specialist tools and equipment, confirming recommended repair procedure from original equipment manufacturer (OEM) or authorised agency, selecting repair procedures and recommended welding method, removing and replacing HSS components, finishing HSS repairs to pre-paint condition, and completing workplace processes and documentation.

It applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Locate OEM or authorised agency repair procedures	1.1 Job requirements are determined from workplace instructions 1.2 ***OEM or authorised agency repair procedures*** are sourced, interpreted and incorporated into planning process 1.3 Hazards associated with the work are identified and risks are managed 1.4 Recommended repair tools and equipment and personal protective equipment (PPE) are selected and checked for serviceability 1.5 Work is planned to identify required HSS repair methods, minimise waste, and use time efficiently
2. Repair or replace HSS components	2.1 Sections not subject to repair are protected, using approved methods and equipment 2.2 HSS sections to be replaced are identified and removed using OEM or authorised agency recommended removal methods and equipment, workplace procedures, and ***safety and environmental requirements*** 2.3 Damaged surfaces are restored to a condition suitable for fitting replacement HSS components 2.4 Vehicle measuring or jigging equipment is used to position replacement HSS component correctly according to OEM or authorised agency specifications 2.5 OEM or authorised agency's surface coatings is protected or reapplied 2.6 Replacement HSS components are aligned and secured within OEM or authorised agency's tolerances
3. Weld HSS components	3.1 Recommended welding equipment for HSS is located and checked for correct operation 3.2 Sample welds are conducted using recommended welding techniques, inspected, and destruction tested for defects according to workplace instructions 3.3 HSS components are refitted using recommended repair methods, materials and equipment, and without causing damage to other systems or components 3.4 Grinding procedures are followed according to OEM or authorised agency and weld material specifications
4. Complete work	4.1 Repairs to HSS components are finished to pre-paint condition

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
processes	according to workplace and ***OEM or authorised agency repair*** procedures 4.2 Final inspection is made to ensure work meets workplace expectations and manufacturer specifications, and components are presented ready for painting 4.3 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.4 Tools and equipment are checked, tagged and reported if faulty, and stored according to workplace procedures 4.5 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• set approved measuring equipment and measure accurately • use basic mathematical operations, including addition and subtraction, to calculate measurements and tolerances.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify defects, quality issues and potential problems associated with repairs to HSS components.
Technology skills to:	• use specialist removal, alignment, welding and replacement equipment.

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Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

OEM or authorised agency repair procedures must include:	• identifying HSS type and location • visual and physical testing procedures • repair and welding specifications.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • manually handling vehicle components
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTN3028 Identify and repair high strength steel components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN028 Identify and repair high strength steel vehicle components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- identify and repair high strength steel (HSS) components to pre-paint condition on three different damaged vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to identifying and repairing HSS vehicle components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling vehicle components
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- original equipment manufacturer (OEM) or authorised agency's:
  - vehicle specifications and measurements
  - approved repair procedures and quality processes
- HSS repair, replacement and welding methods and procedures, including:
  - HSS recommended tools and equipment, including welding equipment
  - types and location of HSS components
  - pre-repair destruction testing of welds on similar material
  - body and panel alignment
  - bonding, riveting and welding
- procedures for protecting vehicle and components during repair work

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- procedures for final inspection of HSS repair.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the damaged HSS vehicle components that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- OEM or authorised agency's approved specifications and recommended repair procedures
- OEM or authorised agency's approved welding equipment
- PPE required to repair HSS components
- three different damaged vehicles requiring HSS component repairs
- tools, equipment and materials appropriate for identifying and repairing HSS vehicle components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN029 Set up and operate universal vehicle measuring systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to set up and use a universal measuring system to measure vehicle chassis misalignment at pre- and post-repair intervals. It involves preparing for the task, selecting and using specialist tools and equipment, setting measuring equipment, measuring vehicle upper and underbody in three dimensions, and completing workplace processes and documentation.

It applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to set up and operate universal measuring system	1.1 Job requirements are determined from workplace instructions 1.2 ***Set-up information*** is accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Measuring equipment*** is selected, ***set up***, and calibrated and checked for serviceability 1.5 Work is planned to complete job requirements efficiently
2. Carry out measurement activities	2.1 Measuring system is secured and adjusted to vehicle according to original equipment manufacturer (OEM) or authorised agency's recommended procedures and ***safety requirements*** 2.2 Vehicle is ***measured in three dimensions*** according to OEM or authorised agency's requirements and workplace procedures, and without causing damage to vehicle system or components 2.3 Pre- and post-repair measurements are recorded according to workplace procedures
3. Complete measurement processes	3.1 Final checks are made to ensure measurements are accurate, meet workplace expectations, and comply with OEM or authorised agency's specifications 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Measuring equipment is checked and maintained according to manufacturer specifications, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.

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Skills	Description
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• interpret, set up and calibrate universal measuring system • interpret OEM or authorised agency's specifications, measurements and tolerances.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist universal measuring equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Set-up information must include**:**	• workplace procedures • measuring equipment information • OEM or authorised agency vehicle chassis specifications.
Measuring equipment must include:	• universal measuring system • hand tools and equipment.
Set up must comply with:	• recommended workplace procedures • specifications of OEM or authorised agency • vehicle specifications.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • following universal measuring equipment safety requirements
	  • selecting and using personal protective equipment (PPE)
	  • manual handling techniques.

Three dimensions of measurement must include:	• length • height • width.

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Unit Mapping Information

Equivalent to AURVTN3029 Set up and operate universal measuring systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN029 Set up and operate universal vehicle measuring systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- set up and operate a universal measuring system on two occasions to take three-dimensional measurements (length, width and height) of upper and underbody on two vehicles with different types of chassis, including checking for the following types of damage:
  - diamond
  - twist
  - kick-up and kick-down.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to setting up and operating universal vehicle measuring systems, including procedures for:
  - following universal measuring equipment safety requirements
  - selecting and using personal protective equipment (PPE)
  - manual handling techniques
- vehicle designs, including:
  - mono chassis
  - space frame
- types of vehicle chassis misalignment damage, including:
  - diamond
  - twist

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  - kick-up and kick-down
  - sag
  - mash and sway damage
- original equipment manufacturer (OEM) or authorised agency's specifications, including pre- and post-repair measurement intervals
- procedures for final inspection of set-up and operation of a universal measuring system.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles that they have measured and repaired using a universal measuring system, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- OEM or authorised agency specifications and measurements
- PPE required to set up and operate a universal vehicle measuring system
- universal vehicle measuring system
- universal vehicle measuring system operating instructions
- two vehicles with different chassis types requiring pre- and post-repair measuring of the misalignment damage specified in the performance evidence
- tools, equipment and materials appropriate for setting up and operating universal vehicle measuring systems.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN030 Service air compressors and air lines

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to service air compressors, pressure regulators, water traps, filters and air lines. It involves cleaning and replacing filters, making necessary adjustments, and completing workplace processes and documentation as part of the day-to-day maintenance of the system.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to service air compressor	1.1 Job requirements are determined from workplace instructions 1.2 Inspection and servicing procedures and information are sourced

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Service air compressor and tank	2.1 ***Service*** and adjustments of air compressor and tank are carried out according to manufacturer specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to system or components 2.2 ***Post-service testing*** is carried out according to workplace procedures
3. Service pressure regulator, filter and air line	3.1 Service and adjustments of pressure regulator, filter and air line are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to system or components 3.2 Post-service testing is carried out according to workplace procedures
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and air compressor system is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate air compressor system information efficiently.

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Skills	Description
Writing skills to:	• legibly and accurately fill out workplace documentation when reporting inspection findings, making recommendations, and recording parts and material used.
Oral communication skills to:	• clarify instructions • report inspection findings and make repair recommendations.
Numeracy skills to:	• use mathematical process, including addition and subtraction, to check and measure components and pressures and compare them to manufacturer specifications • understand measuring and test equipment divisions.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Service must include:	• fluids and lubricating oil • compressor filters • water traps and filters • adjustments and operational testing • visual inspections • completing service records.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment(PPE)
	  • working with stored energy, compressed air, and rotating shafts, belts and pulleys
	• environmental requirements, including procedures for trapping, storing and disposing of air compressor oils and fluids.

Post-service testing must include:	• compressor cut-out pressure • minimising unintended air loss • automatic timing switch adjustment.

Unit Mapping Information

Equivalent to AURVTN2030 Service air compressors and air lines

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN030 Service air compressors and air lines

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect and service two different air compressor systems, in which the work must involve the following system components:
  - air compressor motor
  - air compressor tank
  - drive system
  - pressure regulator
  - water trap and filters
  - air lines and fittings.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to servicing air compressors and air lines, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - working with stored energy, compressed air, and rotating shafts, belts and pulleys
- environmental requirements, including procedures for trapping, storing and disposing of air compressor oils and fluids
- types of air compressors and principles of operation, including:
  - single stage reciprocating compressors
  - rotary screw compressors
- identification, function and operation of air compressor system and components specified in the performance evidence

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- types and applications of air compressor lubricants
- procedures for final inspection of air compressors and air lines, including:
  - compressor cut-out pressure
  - minimising unintended air loss
  - automatic timing switch adjustment.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the air compressor systems that they have serviced, e.g. service orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- manufacturer air compressor specifications
- two different air compressor systems and components requiring service
- tools, equipment and materials appropriate for servicing air compressors and air lines.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN031 Carry out vehicle sectional repairs

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out vehicle sectional repairs and replace components, including structural and non-structural vehicle components. It involves preparing for the task, selecting and using specialist tools and equipment, selecting repair methods, removing damaged components, repairing damaged sections, replacing and aligning new or repaired components, welding and finishing to pre-paint condition, and completing workplace processes and documentation.

It applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to carry out sectional repairs	1.1 Job requirements are determined from workplace instructions 1.2 Original equipment manufacturer (OEM) or authorised agency's specifications for joining methods are accessed and interpreted 1.3 Materials for repair are selected and inspected for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 ***Tools and equipment*** are identified and checked for serviceability 1.6 Work is planned to identify sectional repair methods, minimise waste, and use time efficiently
2. Perform sectional repairs	2.1 Measurements are taken prior to repairs according to workplace procedures 2.2 Damaged sections are removed according to approved ***repair methods*** and equipment, ***safety and environmental requirements*** 2.3 Damaged surfaces are restored to a condition suitable for fitting new sections 2.4 Replacement sections are aligned, secured and welded according to OEM or authorised agency's specifications 2.5 Sectional repairs are completed without causing damage to other vehicle components or systems 2.6 Post-repair measurements are taken according to workplace procedures and compared with OEM or authorised agency's specifications, and further corrective action is taken where non-compliance is identified
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and manufacturer specifications, and repaired vehicle is presented ready for painting 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate:
	  • OEM or authorised agency's measurements
	  • set approved welders
	  • set electronic alignment and repair measuring equipment.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist repair equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include**:**	• personal protective equipment (PPE) • hand tools and equipment • specialist measuring and alignment equipment • OEM or authorised agency's recommended welding equipment.
Repair methods must include**:**	• OEM or authorised agency's recommended procedures • removal of damaged components • repair, replacement and alignment of components • underbody measurements to OEM or authorised agency's specifications • alignment or jigging systems

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	• sectional repairs • approved welding equipment and processes • pre- and post-repair measurements according to workplace procedures.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • manually handling vehicle components
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials from repair process.

Unit Mapping Information

Equivalent to AURVTN3031 Conduct major sectional repairs

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN031 Carry out vehicle sectional repairs

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- complete sectional repairs on three different damaged vehicles, where each sectional repair must involve two of the following:
  - body pillar
  - body rail
  - sill panel
  - quarter panel.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to carrying out vehicle sectional repairs, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling vehicle components
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials from repair process
- original equipment manufacturer (OEM) or authorised agency's specifications and repair information, including:
  - OEM-approved bonding and riveting
  - sectional repair procedures
  - OEM-recommended procedures
  - removal of damaged components

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    - repair, replacement and alignment of components
    - underbody measurements to OEM or authorised agency specifications
    - alignment or jigging systems
    - approved welding equipment and processes
    - pre- and post-repair measurements according to workplace procedures
- procedures for identifying structural and non-structural components, including:
    - body pillars
    - body rails
    - sill panels
    - quarter panels
- types of steels and their repair characteristics
- techniques and procedures for carrying out sectional repairs, including:
    - types of repair tools and equipment and their operating procedures
    - use of structural foam
    - use of weld-through primer
    - alignment methods, techniques and procedures
    - approved welding and attachment procedures
    - bonding, riveting and sealant methods and procedures
- procedures for protecting vehicle and components during repair work
- procedures for final inspection of completed sectional repairs.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle sectional repairs they have completed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace

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- workplace instructions
- OEM or authorised agency's specifications and procedures
- vehicle specifications
- PPE required to carry out sectional repairs
- three different damaged vehicles requiring the sectional repairs specified in the performance evidence
- replacement sectional components
- tools, equipment and materials appropriate for carrying out vehicle sectional repairs.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN035 Apply original equipment manufacturer repair procedures during vehicle repairs

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to locate and apply original equipment manufacturer (OEM) or authorised agency's recommended repair procedures during vehicle or component repair work. It involves preparing for the task, inspecting the vehicle damage, and identifying repair requirements according to OEM or authorised agency's specifications, developing a repair plan, and completing workplace processes and documentation.

It applies to those working in the automotive body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Review OEM procedures	1.1 Job requirements are determined from workplace instructions 1.2 OEM or authorised agency repair procedures and vehicle specifications are identified 1.3 Procedures and vehicle specifications are confirmed using OEM or authorised agency website or repair manuals 1.4 Repair work is planned to minimise waste and use time efficiently 1.5 OEM or authorised agency repair processes and specifications are analysed and incorporated into planning process
2. Apply knowledge of OEM standards	2.1 Hazards associated with the work are identified and risks are managed 2.2 Vehicle and components are located and prepared for repair work and systems or components not being worked on are protected 2.3 Recommended repair materials, tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 2.4 Repair work is completed following workplace and OEM or authorised agency's recommended repair procedures and ***safety and environmental requirements*** 2.5 Identified non-compliances against OEM or authorised agency's specifications are reported to appropriate personnel for rectification according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle or component is presented ready for painting 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, tagged and reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	**Description**
Learning skills to:	• locate specifications and relevant OEM information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues, non-conformances and job outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction to, calculate OEM or authorised agency repair measurements, including identify non-conformance measurements.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify potential or actual hazards and take action to minimise risk • identify non-conformances and quality issues associated with repairs • refer problems outside area of responsibility to appropriate person and suggest possible causes.
Technology skills to:	• use specialist repair tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • manually handling vehicle components
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURVTN3035 Apply original equipment manufacturer repair procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN035 Apply original equipment manufacturer repair procedures during vehicle repairs

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- apply original equipment manufacturer (OEM) or authorised agency repair procedures to three different damaged vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to applying OEM repair procedures during vehicle repairs, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling vehicle components
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- OEM or authorised agency's vehicle specifications and repair procedures, including compliance requirements
- procedures for protecting vehicle and components
- procedures for final inspection of OEM repair procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the OEM or authorised agency repair procedures they have applied when repairing a vehicle, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- OEM or authorised agency repair procedures
- vehicle specifications
- three different damaged vehicles
- PPE requirements
- internet access
- tools, equipment and materials appropriate for applying OEM repair procedures during vehicle repairs.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN039 Set up body alignment equipment on vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to set up body alignment equipment on a vehicle. It involves planning and preparing for the task, measuring the vehicle, selecting and using tools and equipment, setting up alignment equipment on the vehicle, and maintaining the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to set up vehicle body alignment equipment	1.1 Task instructions are interpreted and vehicle to be worked on is identified 1.2 Manufacturer specifications and workplace procedures for aligning vehicle are sourced and interpreted 1.3 ***Safety requirements*** are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor
2. Set up vehicle body alignment equipment	2.1 Vehicle body is measured according to manufacturer specifications, workplace procedures and safety requirements 2.2 Body alignment equipment and tools required for aligning body vehicle are identified and checked for serviceability 2.3 Body alignment equipment is attached to vehicle according to manufacturer specifications, workplace procedures and safety requirements
3. Complete work processes	3.1 Final inspection is made to ensure work meets task instruction and workplace standards, and vehicle is presented ready for use or further process according to workplace procedures 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 3.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported as required 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of vehicle body alignment information and procedures.

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Skills	Description

Reading skills to:	• select and interpret key information from:
	  • manufacturer literature, safety requirements and workplace procedures for aligning a vehicle body
	  • environmental requirements and workplace procedures to ensure a clean and safe work site.

Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division, to measure vehicle body alignment and panel gaps.
Technology skills to:	• set up and operate equipment and tools required to realign vehicle bodies.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear
	  • using hand tools.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN039 Set up body alignment equipment on vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- correctly set up body alignment equipment on one vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to setting up body alignment equipment on vehicles, including procedures for:
  - selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear
  - using hand tools
- types and construction of vehicle bodies
- types and application of vehicle body alignment equipment.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation.

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Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the body alignment equipment they have set up on vehicles, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE for setting up body alignment equipment
- one vehicle requiring body alignment
- vehicle alignment measuring tools
- tools, equipment and materials appropriate for setting up body alignment equipment on vehicles.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN041 Remove and realign vehicle body panels

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and realign vehicle body panels. It involves planning and preparing for the task, identifying types and construction of vehicle body panels, selecting and using tools and equipment, removing, dismantling, reassembling, refitting and realigning body panels, and maintaining the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry. The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and realign body panel	1.1 Task instructions are interpreted and vehicle body panel to be worked on is identified 1.2 Manufacturer specifications and workplace procedures for removing and aligning body panel are sourced and interpreted 1.3 ***Safety requirements*** are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor 1.5 Tools and equipment required for removing and aligning body panel are identified and checked for serviceability
2. Remove body panel	2.1 Body panel is removed according to workplace procedures and safety requirements, and without causing damage to components, tools or equipment 2.2 Body panel is dismantled according to workplace procedures and safety requirements 2.3 Body panel is inspected according to manufacturer specifications 2.4 Body panel inspection results are recorded
3. Replace and realign body panel	3.1 Body panel is reassembled according to manufacturer specifications, workplace procedures and safety requirements 3.2 Body panel is refitted to vehicle according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components, tools or equipment 3.3 Body panel is adjusted and aligned to vehicle according to manufacturer specifications, workplace procedures and safety requirements 3.4 Body panel is inspected to ensure its correct alignment to vehicle 3.5 Alignment inspection results are recorded
4. Complete work processes	4.1 Final inspection is made to ensure work meets task instructions and workplace standards, and vehicle is presented ready for use, further processes, or storage according to workplace procedures 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 4.3 Tools and equipment are checked and stored according to workplace procedures, or tagged and reported as required 4.4 Workplace documentation is processed according to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of vehicle panel removal and alignment information and procedures.

Reading skills to:	• select and interpret key information from:
	  • manufacturer literature, safety requirements and workplace procedures for removing and realigning a body panel
	  • workplace procedures to ensure a clean and safe work site.

Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate distances between panels.
Technology skills to:	• set up and operate equipment and tools required to remove and realign body panels.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:

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	• selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear • using hand tools.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN041 Remove and realign vehicle body panels

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and realign the following two different vehicle body panels:
  - one vehicle mud guard
  - one vehicle door.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and realigning vehicle body panels, including procedures for:
  - selecting and using personal protective equipment (PPE), including safety glasses, ear protection and safety footwear
  - using hand tools
- types and construction of vehicle body panels
- body panel removal, dismantling, assembly and replacement procedures
- body panel measurement and alignment procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

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Assessment must include direct observation.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the body panels that they have removed and realigned, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- PPE for removing and realigning vehicle body panels
- two different vehicle body panels as specified in the performance evidence requiring removal and realignment
- tools, equipment and materials appropriate for removing and realigning vehicle body panels.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTN042 Dismantle vehicle components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to dismantle vehicle components according to workplace procedures. It involves preparing for the task, selecting and using tools and equipment, including personal protective equipment (PPE), cleaning, labelling and storing recycled components, and completing workplace processes and documentation.

It applies to those working in the automotive parts recycling industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Body

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for work	1.1 Job requirements are determined from workplace instructions 1.2 ***Safety and environmental requirements*** and workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures are sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment, including PPE, are sourced and checked for serviceability
2. Carry out dismantling activities	2.1 Vehicle components to be dismantled are identified 2.2 Components are dismantled according to original equipment manufacturer (OEM) specifications, workplace procedures, and safety and environmental requirements 2.3 Removed components are cleaned and legibly labelled without causing damage and according to workplace procedures 2.4 Labelled components are stored according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Numeracy skills to:	• interpret part numbers and numerical information in task instructions.
Planning and organising	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within

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Skills	Description
skills to:	workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • manually handling and storing vehicle components
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of vehicle fluids, gas and other waste materials released during the dismantling process.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTN042 Dismantle vehicle components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- dismantle, clean and tag five of the following vehicle units in line with workplace procedures:
  - engine and cooling system
  - suspension system
  - steering system
  - final drive assembly
  - exhaust system
  - body panels.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to dismantling vehicle components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - manually handling and storing vehicle components
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of vehicle fluids, gas and other waste materials released during the dismantling process
- dismantling procedures, including:
  - original equipment manufacturer (OEM) specifications
  - procedures for removing salvageable vehicle components
- workplace procedures and products for cleaning vehicle component

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- workplace procedures for labelling and storing vehicle components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle components that they have dismantled, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- vehicle manufacturer service and repair manuals
- PPE required to salvage vehicle components
- vehicles with salvageable components as specified in the performance evidence requiring removal
- tools, equipment and materials appropriate for removing salvageable vehicle components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP002 Mask vehicle panels and components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to apply masking materials in preparation for vehicle and component refinishing. It involves preparing for the task, selecting and using tools and equipment, selecting masking materials appropriate to the vehicle or component, masking off surrounding panels and components before refinishing activities, and completing workplace processes and documentation.

It applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical – Paint

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to mask vehicle	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
panels and components	1.2 Masking ***materials*** and ***methods*** are selected according to workplace instructions 1.3 Hazards associated with the work are identified and risks are managed 1.4 Masking ***tools and equipment*** and personal protective equipment (PPE) are identified and checked for serviceability 1.5 Work is planned to minimise waste and use time efficiently
2. Carry out masking activities	2.1 Vehicle surfaces and ***components*** that require masking are identified, cleaned or removed 2.2 Masking activities are carried out according to workplace procedures and ***safety and environmental requirements***, and without causing damage to vehicle surfaces and components
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate quantities of masking materials.

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Skills	Description
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist masking tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Materials must include**:**	• polyvinyl chloride (PVC) • door aperture and trim masking tapes • masking papers, mediums and templates.
Methods must include**:**	• reverse masking techniques • half-masking techniques • hard-line and soft-line edge masking techniques • masking for blend out • spraying.
Tools and equipment must include**:**	• cutting blades and scalpels • masking machines.
Components must include:	• in situ doors • mud guards • boot lids • bonnets • plastic components • glass sections.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURVTP2002 Carry out masking procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP002 Mask vehicle panels and components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- mask the following vehicle panels:
  - complete vehicle front end
  - complete vehicle rear end
  - complete vehicle side
- during above work, mask the following components in situ:
  - doors
  - mud guards
  - boot lid
  - bonnet
  - plastic components
  - glass sections.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to masking vehicle panels and components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- types and use of masking materials, including:

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  - polyvinyl chloride (PVC)
  - door aperture and trim masking tapes
  - masking papers, mediums and templates
- masking methods and techniques to reproduce original equipment manufacturer (OEM) paint aesthetics and finish, including operation of masking equipment
- procedures for protecting vehicle and components when masking vehicle panels
- procedures for final inspection of vehicle masking requirements.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the masking work they have carried out on vehicles, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE for masking processes
- masking materials
- vehicle parts specified in the performance evidence requiring masking
- tools, equipment and materials appropriate for masking vehicle panels and components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP005 Apply rust prevention and sound deadening materials to vehicle body components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to apply rust prevention and sound deadening materials to vehicle body components. It involves preparing for the task, selecting and using specialist application tools and equipment, selecting and applying materials according to manufacturer specifications and safety data instructions, and completing workplace processes and documentation.

It applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Paint

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to apply rust prevention and sound deadening materials	1.1 Job requirements are determined from workplace instructions 1.2 ***Application information*** is accessed and interpreted 1.3 ***Materials*** are calculated, selected and inspected for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.6 Work is planned to identify rust prevention methods, minimise waste, and avoid damage to vehicle
2. Prepare surfaces	2.1 Surfaces are cleaned according to workplace procedures and ***safety and environmental requirements*** 2.2 Surfaces are prepared for material application process without causing damage to components or systems
3. Apply materials	3.1 Vehicle components requiring the application of rust prevention and sound deadening materials are identified and prepared 3.2 Materials are applied according to manufacturer specifications and recommended ***application methods*** 3.3 Special treatments or materials are dried using approved methods and equipment
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and vehicle components are presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division to, calculate surface area and material quantity • use measuring tapes.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist rust prevention and sound deadening tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Application information must include**:**	• workplace procedures • manufacturer specifications • technical data sheets (TDS) • safety data sheets (SDS).
Types of materials must include**:**	• fish oil • wax compounds • joint and seam sealants • sheet, spray-on and brush-on sound deadening • mechanically fastened and adhesive bonded sound deadening pads.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using TDS for sound deadening materials
	  • using SDS for fish oil, sealers and adhesives
	  • handling and storing rust prevention and sound deadening

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	materials • using tools and equipment • environmental requirements, including procedures for trapping, storing and disposing of waste materials.
Application methods must include:	• hand brushing • mixing • spraying • mechanical fastening.

Unit Mapping Information

Equivalent to AURVTP2005 Apply rust prevention and sound deadening materials

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP005 Apply rust prevention and sound deadening materials to vehicle body components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- apply five of the following rust prevention and sound deadening materials to different vehicle body components:
  - fish oil
  - wax compounds
  - spray-on sound deadening
  - brush-on sound deadening
  - adhesive bonded sound deadening pads
  - joint and seam sealants.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to applying rust prevention and sound deadening materials to vehicle body components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) for sound deadening materials
  - using safety data sheets (SDS) for fish oil, sealers and adhesives
  - handling and storing rust prevention and sound deadening materials
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- sound deadening material manufacturer specifications

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- types and uses of rust prevention and sound deadening materials
- rust prevention and sound deadening application methods and techniques
- types and uses of rust prevention and sound deadening equipment, including:
  - spray gun
  - heat gun
  - brush applicators
- procedures for protecting vehicle and components when applying rust protection and sound deadening materials
- procedures for final inspection of fitted sound deadening and rust prevention materials.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the rust prevention and sound deadening materials they have applied to vehicle body components, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- TDS for sound deadening materials
- SDS for fish oil, sealers and adhesives
- PPE to apply rust prevention and sound deadening materials
- rust prevention and sound deadening materials
- vehicle body components requiring the application of rust prevention and sound deadening materials specified in the performance evidence
- tools, equipment and materials appropriate for applying rust prevention and sound deadening materials to vehicle body components.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP006 Apply refinishing primers to vehicle surfaces

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to prepare vehicle surfaces and then apply refinishing primers to them prior to final paint coats. It involves preparing for the task, selecting and using specialist tools and equipment, mixing and applying automotive primers to substrate surfaces according to manufacturer specifications, and completing workplace processes and documentation.

It applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Paint

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for work	1.1 Job requirements are determined from workplace instructions 1.2 ***Primer information and procedures*** are sourced and interpreted 1.3 ***Materials*** are selected and checked for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 Painting ***tools and equipment*** are selected and checked for serviceability 1.6 Work is planned to identify ***preparation methods***, minimise waste, and use time efficiently
2. Prepare surfaces and apply primers prior to final paint coats	2.1 ***Components*** are inspected and unrecorded damage to paint surface is recorded and reported 2.2 Components and paint surfaces surrounding paint repair are protected using masking materials and approved methods, and according to ***safety and environmental requirements*** 2.3 Surfaces to be primed are cleaned, contaminants removed, and undamaged areas masked off 2.4 Recommended surface primers are applied using approved methods, materials and equipment 2.5 Priming is completed without causing damage to vehicle systems and components
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle surface is presented ready for final paint coats 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate quantities and measure primers.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use electronically controlled spray painting booths and mixing systems • use specialist painting tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Primer information and procedures must include:	• paint manufacturer specifications • paint technical data sheets (TDS) • paint safety data sheets (SDS) • workplace procedures.
Materials must include**:**	• primers, including aerosol primers • hardeners • reducers • wet and dry abrasives • cleaning materials • masking materials.
Tools and equipment must **i**nclude:	• cleaning equipment • spray painting equipment • rubbing down equipment.
Preparation methods must include**:**	• wet and dry sanding • masking • chemical cleaning

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	• priming • touching up • wet on wet application.
Components must include**:**	• in situ panels • doors • mud guards • bonnets.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using personal protective equipment (PPE)
	  • using TDS and SDS for paint primers
	  • handling and storing paint materials
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTP2006 Prepare vehicle components for paint repairs

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP006 Apply refinishing primers to vehicle surfaces

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- prepare and apply the following refinishing primers according to paint manufacturer specifications on two different vehicle panels or substrates to a minimum area of 300 mm x 200 mm:
  - epoxy
  - acid-based
  - ultraviolet (UV) cured
  - sealant
  - non-sandable
  - adhesion promoters.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to applying refinishing primers to vehicle surfaces, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) and safety data sheets (SDS) for paint primers
  - handling and storing paint materials
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- paint manufacturer specifications
- types and uses of primers specified in the performance evidence

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- surface preparation and primer mixing and application techniques, including:
  - cleaning paint repair areas
  - wet and dry rubbing procedures
  - correct use of positive air feed masks
  - masking techniques
  - primer application methods
  - paint drying methods
- types of abrasives and grading
- types and use of spray painting equipment and maintenance requirements
- procedures for protecting undamaged vehicle and components when applying refinishing primers
- procedures for final inspection of completed primed surface.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle surfaces they have prepared and primed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- TDS and SDS for primers
- PPE to apply primers for paint repairs
- primers and materials, including:
  - epoxy primer
  - acid-based primer
  - UV cured primer
  - sealant

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  - non-sandable
  - adhesion promoters
- two different vehicles or substrates requiring preparation and primer application
- tools, equipment and materials appropriate for preparing vehicle surfaces and mixing and applying primers.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP008 Clean and polish vehicle paint surfaces

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to clean and polish vehicle paint surfaces. It involves preparing for the task, selecting and using cleaning and polishing material to detail vehicle paint surfaces, selecting and using specialist polishing equipment, and completing workplace processes and documentation.

It applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Paint

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to clean and polish vehicle paint	1.1 Job requirements are determined from workplace instructions 1.2 ***Cleaning information*** is accessed and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
surfaces	1.3 Cleaning and polishing ***materials*** are selected and checked for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.6 Work is planned to identify cleaning and polishing methods, minimise waste, and avoid damage to vehicle
2. Carry out cleaning and polishing activities	2.1 Cleaning and polishing tools and equipment are used according to workplace procedures and ***safety and environmental requirements*** 2.2 Products are used according to vehicle paint finish type, workplace methods and paint manufacturer specifications 2.3 Exterior paint finish is cleaned and polished according to workplace and manufacturer procedures 2.4 Cleaning and polishing are completed without causing damage to vehicle components or systems
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.

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Skills	Description
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use workplace technology related to preparing a vehicle mechanical and electrical service repair quotation.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Cleaning information must include**:**	• paint safety data sheets (SDS) • manufacturer procedures • workplace procedures.
Materials must include:	• cleaning and polishing agents • polishing tools and equipment.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using SDS for cleaning and polishing materials
	  • handling and storing cleaning and polishing materials
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTP2008 Clean and polish vehicle exterior paint

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP008 Clean and polish vehicle paint surfaces

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- clean and polish the paint surfaces of three different vehicles, in which the work must involve the use of a polishing buff.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to cleaning and polishing vehicle paint surfaces, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for cleaning and polishing materials
  - handling and storing cleaning and polishing materials
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- types and use of cleaning and polishing buff and materials and their recommended applications
- procedures for final inspection of cleaned and polished vehicle.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle paint surfaces that they have cleaned and polished, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive detailing workplace or simulated workplace
- workplace instructions
- SDS for cleaning and polishing materials
- PPE required to clean and polish vehicle exterior paint surfaces
- cleaning and polishing materials
- three different painted vehicles requiring cleaning and polishing
- tools, equipment and materials appropriate for cleaning and polishing vehicle paint surfaces.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP018 Rectify vehicle multi-layer and pearl paint faults using two-pack systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to rectify multi-layer and pearl paint faults on vehicle body components. It involves preparing for the task, selecting and using specialist tools and equipment, identifying and rectifying paint faults using multi-layer and pearl two-pack paint materials according to manufacturer specifications, and completing workplace processes and documentation.

It applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Paint

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to rectify multi-layer and pearl paint fault	1.1 Job requirements are determined from workplace instructions 1.2 ***Paint rectification information*** is accessed and interpreted 1.3 Vehicle paint specifications are identified from workplace instructions and recorded 1.4 Multi-layer and pearl paint ***materials*** are selected and inspected for quality 1.5 Hazards associated with the work are identified and risks are managed 1.6 ***Paint tools and equipment*** and personal protective equipment (PPE) are selected and checked for serviceability 1.7 Work is planned to identify methods for rectifying multi-layer and pearl paint faults, minimise waste, and prevent damage to vehicle
2. Determine paint fault, its cause and rectification requirements	2.1 Cause of paint fault is determined from available information 2.2 Faulty paintwork is visually inspected to determine extent of damage and areas requiring rectification 2.3 Existing paint film build-up is identified and assessed 2.4 Damage to paintwork is assessed from visual comparison with undamaged paintwork 2.5 Fault rectification requirements are determined without causing undue damage to vehicle components or systems
3. Carry out rectification and touch-up activities	3.1 Materials required to restore paintwork to pre-damage condition are determined from paint manufacturer recommended procedures 3.2 Materials are measured, mixed and applied using approved equipment 3.3 Damaged paintwork is rectified and blended with existing paintwork using two-pack system 3.4 Rectification processes are completed according to workplace procedures and ***safety and environmental requirements***, and without causing damage to vehicle components and systems
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and vehicle or component is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• identify paint specification codes
	• use basic mathematical operations, including addition, subtraction, multiplication and division to:
	  • calculate and measure quantities of paint and materials
	  • determine ratios for mixing paint
	  • calculate and set paint drying times
	• set spray painting air pressure and spray booth temperatures
	• set paint measuring system.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist tools and equipment, including paint measuring systems.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Paint rectification information must include:	• paint manufacturer specifications • paint technical data sheets (TDS) • paint safety data sheets (SDS) • workplace procedures.
Materials must include:	• solvent base coats and clear coats • water-based materials • paint thinners and hardeners • polishing materials.
Paint tools and equipment must include:	• mixing and tinting systems • spray guns • approved drying equipment • cleaning equipment.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using TDS and SDS for multi-layer and pearl two-pack paint
	  • handling and storing paint materials
	  • using tools and equipment
	  • using approved drying area
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTP3018 Carry out paint rectification for multi-layer and pearl using two component system

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP018 Rectify vehicle multi-layer and pearl paint faults using two-pack systems

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- rectify multi-layer and pearl paint faults on three different vehicles using two-pack materials, in which the work must involve:
  - blending and clearing a vehicle panel
  - partially blending and fading out blend.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to rectifying vehicle multi-layer and pearl paint faults using two-pack systems, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) and safety data sheets (SDS) for multi-layer and pearl two-pack paint
  - handling and storing paint materials
  - using tools and equipment
  - using approved drying area
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- paint manufacturer specifications
- types and features of multi-layer and pearl two-pack materials
- types and use of painting equipment, including:
  - types of spray guns and maintenance requirements

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  - spray gun set-up, use and maintenance
  - correct use of positive air feed masks
- paint rectification and touch-up techniques and procedures, including:
  - identifying paint surface faults
  - surface preparation methods
  - paint mixing procedures
  - multi-layer and pearl paint application methods
  - drying methods for multi-layer and pearl paint refinishing materials
- procedures for protecting vehicle and components when rectifying and touching up paint faults
- procedures for final inspection of paint rectification using multi-layer and pearl two-pack systems.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle paintwork they have rectified using multi-layer and pearl two-pack systems, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- TDS and SDS for multi-layer and pearl two-pack paint
- PPE required to rectify multi-layer and pearl two-pack paint materials
- multi-layer and pearl two-pack refinishing materials
- three different vehicles requiring paint rectification using multi-layer and pearl two-pack paint refinishing materials
- tools, equipment and materials appropriate for rectifying and touching up multi-layer and pearl paint faults using two-pack systems.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP019 Prepare and paint plastic and composite vehicle surfaces

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to prepare and apply refinishing materials to plastic and composite vehicle surfaces. It involves preparing for the task, selecting and using specialist tools and equipment, preparing components, mixing and applying paint materials to plastic or composite components according to paint manufacturer specifications, and completing workplace processes and documentation.

It applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Paint

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to paint plastic and composite components	1.1 Job requirements are determined from workplace instructions 1.2 ***Paint information*** is accessed and interpreted 1.3 Plastic paint ***materials*** are selected and inspected for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 ***Paint tools and equipment*** and personal protective equipment (PPE) are identified and checked for serviceability 1.6 Work is planned to identify preparation and painting methods, minimise waste, and prevent damage to vehicle
2. Clean plastic or composite surface	2.1 Surface is prepared for refinishing according to paint manufacturer technical specifications and ***safety and environmental requirements*** 2.2 Surface is checked to ensure it is free of oil, dust and other contaminants 2.3 Surface preparation is completed without causing damage to vehicle, other components and systems
3. Apply refinishing material	3.1 Plastic or composite refinishing material is applied according to paint manufacturer approved methods 3.2 Refinishing material is dried using approved methods and equipment 3.3 Painted area is polished and finished using approved techniques and equipment 3.4 ***Paint finish is checked*** against specifications 3.5 Refinishing is completed without causing damage to surrounding painted areas and components
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division to:
	  • calculate quantities of refinishing materials
	  • measure and determine ratios for mixing refinishing materials
	• set painting air pressure and drying equipment.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist paint refinishing tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Paint information must include:	• paint manufacturer specifications • paint technical data sheets (TDS) • paint safety data sheets (SDS) • workplace procedures.
Materials must include:	• approved abrasive papers • suitable fillers • two-pack urethane acrylic enamels • metallic two-pack and clear acrylic lacquers • pearl finishes • water-based finishes

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	• paint thinners and reducers • cleaning materials • suitable primers • anti-static cleaning agents • flexible additives.
Paint tools and equipment must include:	• spray guns • air pressure regulators and air compressors • approved spray area.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using TDS and SDS for paint materials
	  • handling and storing paint materials
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Checking paint finish must include:	• checking colour, texture, depth and gloss • ensuring paint finish is free of defects • ensuring paint finish blends into surrounding surfaces.

Unit Mapping Information

Equivalent to AURVTP3019 Prepare and paint plastic components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP019 Prepare and paint plastic and composite vehicle surfaces

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- prepare, paint and polish three different plastic and composite vehicle surfaces, in which the work must involve:
  - one plastic vehicle surface
  - one composite vehicle surface.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to preparing and painting plastic and composite vehicle surfaces, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) and safety data sheets (SDS) for paint materials
  - handling and storing paint materials
  - using tools and equipment
  - using approved drying area
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- paint manufacturer specifications and recommended application methods
- types and use of plastic and composite painting and refinishing materials
- plastic and composite surface preparation techniques
- paint application methods and techniques, including:
  - spray and drying equipment

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  - paint fault and rectification procedures
  - paint drying methods
  - polishing methods and equipment
  - correct use of positive air feed masks
  - using approved drying area
- types and use of spray guns, including:
  - spray gun operation and spraying techniques
  - spray gun cleaning and maintenance methods
- procedures for protecting vehicle and components when painting vehicle components
- procedures for final inspection of painted plastic and composite components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the plastic and composite vehicle surfaces that they have painted, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- TDS and SDS for paint materials
- PPE required to prepare and paint plastic and composite vehicle components
- materials required to prepare and paint plastic and composite vehicle components
- plastic and composite components specified in the performance evidence requiring painting
- tools, equipment and materials appropriate for preparing and painting plastic and composite vehicle surfaces.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP020 De-nib, buff and polish vehicle painted surfaces

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out final polishing activities on vehicle painted surfaces. It involves preparing for the task, selecting and using specialist tools and equipment, identifying paint defects, selecting buffing and polishing materials, de-nibbing, buffing and polishing surfaces, and completing workplace processes and documentation.

It applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Paint

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to carry out	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
de-nibbing, buffing and polishing	1.2 Surface repair and finish ***materials*** are selected and inspected for quality 1.3 Hazards associated with the work are identified and risks are managed 1.4 Hand and power tools, including personal protective equipment (PPE), are selected and checked for serviceability 1.5 Work is planned to identify methods for de-nibbing, buffing and polishing, minimise waste, and prevent damage to vehicle
2. Carry out de-nib, buff and polish activities	2.1 Paint contaminants are identified and removed using paint cleaning clay bars 2.2 De-nibbing is conducted to remove minor paint inclusions and paint defects 2.3 Hand and machine buffing and polishing are conducted according to workplace procedures and ***safety and environmental requirements***
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills	• clarify instructions and procedures • clearly report quality issues and job outcomes.

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Skills	Description
to:	
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist polishing equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Materials must include:	• paint cleaning clay bars • compounds and polishes • polishing pads of wool and foam type • cleaning products.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • handling and storing polishing materials
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTP3020 Carry out denibbing, buffing and polishing

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP020 De-nib, buff and polish vehicle painted surfaces

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- de-nib, hand and machine buff, and polish the painted surfaces of three different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to de-nibbing, buffing and polishing vehicle painted surfaces, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - handling and storing polishing materials
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- techniques for buffing, polishing and de-nibbing painted surfaces, including:
  - use of paint cleaning clay bars
  - use of de-nibbing and polishing materials
  - methods to reproduce original equipment manufacturer (OEM) and adjacent panel surface finish to pre-refinished condition
  - effect of silicones and silicone type polishes on refinishing quality
  - paint faults and rectification procedures
- types and correct use of de-nibbing, buffing and polishing equipment
- procedures for protecting vehicle and components when de-nibbing, buffing and polishing vehicle painted surfaces

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- procedures for final inspection of de-nibbed, buffed and polished vehicle painted surfaces.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle painted surfaces that they have de-nibbed, buffed and polished, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required to buff, polish and de-nib painted surfaces
- materials required to de-nib, buff and polish vehicle painted surfaces
- three different painted vehicles requiring de-nibbing, buffing and polishing
- tools, equipment and materials appropriate for de-nibbing, buffing and polishing vehicle painted surfaces.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP021 Restore vehicle body exterior paint

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to restore vehicle body exterior paint. It involves preparing for the task, selecting and using specialist tools and equipment, selecting and using polishing materials to restore painted vehicle exterior surfaces, and completing workplace processes and documentation.

It applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Paint

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to restore vehicle body exterior	1.1 Job requirements are determined from workplace instructions 1.2 ***Restoration information*** is accessed and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
paint	1.3 Polishing ***materials*** are selected and inspected for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 ***Tools and equipment*** are identified and checked for serviceability 1.6 Work is planned to identify restoration procedures, minimise waste, and avoid damage to vehicle
2. Inspect and identify paint faults	2.1 Faults are identified and inspected according to workplace procedures and without causing further damage to vehicle exterior paint or components 2.2 Restoration process is determined according to type of damage, paint type and required finish
3. Undertake restoration activities	3.1 Restoration materials are selected according to type of damage and type of finishing material 3.2 Exterior paint finish is polished according to workplace and manufacturer prescribed procedures 3.3 Polishing tools and equipment are used according to workplace procedures and ***safety and environmental requirements*** 3.4 Materials are used during restoration process according to vehicle finish type, workplace methods, and paint manufacturer specifications 3.5 Paint restoration is completed without causing damage to components or systems
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate quantities of cleaning and polishing materials.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist polishing and restoration tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Restoration information must include:	• manufacturer specifications • workplace procedures • safety data sheets (SDS).
Materials must include:	• polish • finishing agents • cleaning agents.
Tools and equipment must include:	• hand tools • power tools • personal protective equipment (PPE).

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using SDS for polishing and cleaning agents
	  • handling and storing polishing materials
	  • using tools and equipment

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	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTP3021 Restore vehicle exterior paint

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP021 Restore vehicle body exterior paint

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- restore exterior paint on the following vehicle surfaces:
  - bonnet
  - roof
  - boot
  - vehicle side.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to restoring vehicle body exterior paint, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for polishing and cleaning agents
  - handling and storing polishing materials
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- paint manufacturer specifications
- types of vehicle body exterior finishing faults, including:
  - colour change
  - surface variations
  - rework

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    - pitting
- types and features of cleaning, polishing and restoration agents and their recommended applications
- types and use of cleaning and polishing tools and equipment
- cleaning and polishing methods and techniques, including:
    - identifying paint surface faults
    - surface preparation methods
    - applying polishing materials
- procedures for protecting vehicle and components when restoring exterior paint
- procedures for final inspection of restored vehicle exterior paint.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle body exterior paint that they have restored, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required to restore vehicle exterior painted surfaces
- SDS for polishing and cleaning agents
- polishing and cleaning materials required to restore vehicle exterior paintwork
- vehicle painted components specified in the performance evidence requiring restoring and polishing
- tools, equipment and materials appropriate for restoring vehicle body exterior paint.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP024 Apply clear over base multi-layer and pearl refinishing materials to vehicle body components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to mix and apply clear over base (COB) multi-layer and pearl refinishing materials to vehicle body components. It involves preparing for the task, selecting and using specialist tools and equipment, identifying paint defects, preparing vehicle surfaces, selecting, mixing and applying refinishing materials according to manufacturer specifications, and completing workplace processes and documentation.

It applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Paint

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to mix and apply COB multi-layer and pearl refinishing materials	1.1 Job requirements are determined from workplace instructions 1.2 Vehicle paint specifications, technical data sheets (TDS) and paint safety data sheets (SDS) are accessed and interpreted 1.3 ***Refinishing materials*** are selected and inspected for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 Refinishing ***tools and equipment***, including personal protective equipment (PPE), are selected and checked for serviceability 1.6 Work is planned to identify mixing and application methods for COB multi-layer and pearl paint, minimise waste, prevent damage to vehicle and use time efficiently
2. Mix COB multi-layer and pearl refinishing materials	2.1 Refinishing materials are calculated and mixed according to paint manufacturer specifications, formulas and codes 2.2 Codes and information relevant to job requirement are recorded accurately 2.3 Mixing activities are carried out according to workplace procedures and ***safety and environmental requirements*** 2.4 COB multi-layer and pearl paints are mixed without causing damage to components or systems
3. Apply COB multi-layer and pearl refinishing materials	3.1 Refinishing materials are applied using manufacturer recommended method and intervals according to safety and environmental requirements 3.2 Refinishing materials are dried using approved methods and equipment 3.3 Refinishing techniques are used to ensure painted surface ***meets specifications*** 3.4 Paint surface faults are rectified using compounds, polishes and glazes to blend rectified areas with existing paintwork
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• interpret paint codes and formulas
	• accurately set and adjust settings for:
	  • spray painting air pressure
	  • paint measuring system
	  • spray booth temperature settings
	• use basic mathematical operations, including addition, subtraction, multiplication and division to, determine ratios, measure and calculate quantities of paint and materials.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Technology skills to:	• use specialist equipment, including:
	  • spray painting equipment
	  • electronic paint measuring and mixing system
	  • computerised drying equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Refinishing materials must	• metallic, pearl two-pack base coat • clear two-pack acrylic enamel

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include:	• water-based paints • hardeners • paint reducers.
Tools and equipment must include:	• spraying equipment • paint tinting systems • approved spray area • drying equipment • paint measuring system.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using TDS and SDS for COB two-pack paint
	  • handling and storing paint materials
	  • using tools and equipment
	  • using approved drying area
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Meeting specifications must include:	• matching colour, texture, depth and gloss • ensuring paint finish is contaminant-free • ensuring paint finish blends into surrounding surfaces.

Unit Mapping Information

Equivalent to AURVTP3024 Mix and apply clear over-base multi-layer pearl refinishing materials

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP024 Apply clear over base multi-layer and pearl refinishing materials to vehicle body components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- mix and apply clear over base (COB) multi-layer pearl refinishing materials on three different vehicles, including two of the following vehicle body components:
  - single vehicle panel
  - full vehicle side
  - vehicle front end or rear end.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to applying clear over base multi-layer and pearl refinishing materials to vehicle body components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) and safety data sheets (SDS) for COB two-pack paint
  - handling and storing paint materials
  - using tools and equipment
  - using approved drying area
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- vehicle paint specifications

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- types and application methods for automotive paint, including correct use of positive air feed masks
- mixing and application techniques for COB multi-layer and pearl refinishing materials, including:
  - paint mixing techniques and systems
  - visual colour matching techniques and use of colour test cards
  - paint fault identification and rectification methods for COB multi-layer and pearl refinishing materials
- types and use of paint colour matching equipment, including:
  - set-up and operation of paint mixing system
  - set-up, operation and maintenance of spray guns
  - paint drying equipment
  - paint cleaning materials and equipment
- procedures for protecting vehicles and components when applying refinishing materials
- procedures for final inspection of completed COB multi-layer pearl application.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the COB refinishing materials they have applied to vehicle body components, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- paint and vehicle manufacturer specifications, paint codes
- TDS and SDS for COB multi-layer and pearl refinishing materials
- PPE, including positive air feed masks
- materials to apply COB multi-layer and pearl refinishing materials
- COB refinishing materials

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- three different vehicles or panels requiring painting with COB multi-layer and pearl refinishing materials
- tools, equipment and materials appropriate for mixing and applying COB multi-layer and pearl refinishing materials.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP025 Apply water-based refinishing materials to vehicle bodies and substrates

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to mix and apply water-based refinishing materials in order to refinish a variety of vehicle bodies and substrates. It involves preparing for the task, selecting and using specialist tools and equipment, identifying paint defects, preparing surfaces, selecting, mixing and applying water-based refinishing materials according to manufacturer specifications, and completing workplace processes and documentation.

It applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Paint

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to mix and apply water-based refinishing materials	1.1 Job requirements are determined from workplace instructions 1.2 ***Refinishing information*** is accessed and interpreted 1.3 ***Refinishing materials*** are selected and inspected for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 ***Refinishing tools and equipment*** and personal protective equipment (PPE) are selected and checked for serviceability 1.6 Work is planned to identify mixing and application methods for water-based paint, minimise waste, prevent damage to vehicle, and use time efficiently
2. Mix water-based refinishing materials	2.1 Water-based paint materials are calculated and mixed according to paint manufacturer specifications, formulas, codes, workplace procedures, and ***safety and environmental requirements*** 2.2 Codes and information relevant to job requirements are recorded accurately
3. Apply water-based refinishing materials	3.1 Refinishing materials are applied using manufacturer recommended ***method*** and intervals, and techniques that ensure painted surface ***meets specifications***, according to safety and environmental requirements 3.2 Refinishing materials are dried using approved methods and equipment
4. Rectify paint faults	4.1 Paint faults are identified according to industry and workplace procedures 4.2 Rectification procedures are selected to suit fault or damage type 4.3 Materials to rectify paintwork are determined from paint manufacturer information 4.4 Paint surface faults are rectified using compounds, polishes and glazes to blend rectified areas with existing paintwork
5. Complete work processes	5.1 Final inspection is made to ensure work meets workplace expectations and vehicle body is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 5.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• interpret paint codes and formulas
	• accurately set and adjust settings for:
	  • spray painting air pressure
	  • paint measuring system
	  • spray booth temperature settings
	• use basic mathematical operations, including addition, subtraction, multiplication and division to, determine ratios, measure and calculate quantities of paint and materials.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Technology skills to:	• use specialist equipment, including:
	  • spray painting equipment
	  • electronic paint measuring and mixing system
	  • computerised drying equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Refinishing information	• paint manufacturer specifications • paint technical data sheets (TDS)

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must **include**:	• paint safety data sheets (SDS) • workplace procedures.
Refinishing materials must include:	• water-based solid, metallic and pearl paint materials • water-based paint reducers and hardeners • cleaning materials.
Refinishing tools and equipment must include:	• spaying equipment • paint drying equipment • paint mixing system.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using TDS and SDS for water-based paint
	  • handling and storing paint materials
	  • using tools and equipment
	  • using approved drying area
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Methods must include:	• spraying techniques • drying procedures • detailing.
Meeting specifications must include:	• matching colour, texture, depth and gloss • ensuring paint finish is contaminant-free • ensuring paint finish blends into surrounding surfaces.

Unit Mapping Information

Equivalent to AURVTP3025 Mix and apply water-based refinishing materials

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP025 Apply water-based refinishing materials to vehicle bodies and substrates

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- apply water-based refinishing materials on three different vehicle substrates, including two of the following:
  - vehicle panel
  - full vehicle side
  - vehicle front end or rear end.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to applying water-based refinishing materials to vehicle bodies and substrates, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using technical data sheets (TDS) and safety data sheets (SDS) for water-based paint
  - handling and storing paint materials
  - using tools and equipment
  - using approved drying area
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- paint manufacturer specifications
- types and application methods for automotive water-based refinishing materials, including correct use of positive air feed masks
- mixing and application techniques for water-based refinishing materials, including:

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  - paint mixing techniques and systems
  - paint fault identification and rectification methods for water-based refinishing materials
- types and use of equipment used in water-based refinishing processes, including:
  - set-up and operation of paint mixing system
  - set-up, operation and maintenance of spray guns
  - paint drying equipment
  - paint cleaning materials and equipment
- procedures for protecting vehicle and components when applying refinishing materials
- procedures for final inspection of applied water-based refinishing materials.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having applied water-based refinishing materials to vehicle bodies and substrates, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- paint and vehicle manufacturer specifications
- paint codes
- TDS and SDS for water-based paint
- PPE, including positive air feed masks
- water-based refinishing materials
- three different vehicle substrates specified in the performance evidence requiring painting with water-based refinishing materials
- tools, equipment and materials appropriate for mixing and applying water-based refinishing materials to vehicle bodies and substrates.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTP026 Apply basic airbrush techniques to vehicle body panels

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to apply basic airbrush techniques to a variety of vehicle panels and substrates. It involves preparing for the task, selecting and using specialist tools and equipment, selecting designs and templates, applying refinishing materials according to workplace and customer instructions, and completing workplace processes and documentation.

It applies to those working in the automotive paint refinishing repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Paint

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to apply basic airbrush techniques	1.1 Job requirements are determined from workplace instructions 1.2 Airbrush specifications are accessed and interpreted 1.3 Airbrush ***materials*** are selected and inspected for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 ***Airbrush tools and equipment*** and personal protective equipment (PPE) are selected and checked for serviceability 1.6 Work is planned to identify basic ***airbrush application techniques***, minimise waste, and prevent damage to vehicle
2. Apply airbrushing	2.1 Paint surface preparation methods are identified 2.2 Surfaces are prepared for airbrush according to workplace procedures and ***safety and environmental requirements*** 2.3 Prepared stencil is airbrushed over to produce a flat and graded wash and geometric shapes 2.4 Visual light and shaded texture is achieved
3. Produce designs and apply clear top coat	3.1 Controlled straight and curved work using airbrush graduation techniques is carried out 3.2 Shading patterns and designs are produced using airbrush graduation techniques 3.3 Clear top coat is prepared using solvent and tack rags 3.4 Clear top coat is applied and checked for texture, depth and gloss 3.5 Surface refinishing is completed according to workplace procedures and timeframes
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• accurately set and adjust settings for spray painting air pressure
	• use basic mathematical operations, including addition and subtraction, to:
	  • determine paint mixing ratios
	  • measure and calculate quantities of paint.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use workplace airbrush technology and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Materials must include:	• templates and stencils • masking mediums • polishing compounds and glazes • cleaning materials.
Airbrush tools and equipment must include:	• single and double action airbrush gun • gravity feed airbrush gun • side feed airbrush gun.
Airbrush application techniques must include:	• stencilling techniques • graduation techniques.

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Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • handling and storing paint materials
	  • using tools and equipment
	  • using approved drying area
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTP2026 Carry out basic airbrush application techniques

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTP026 Apply basic airbrush techniques to vehicle body panels

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- airbrush basic customised designs on two different vehicle body panels or substrates, in which the work must involve:
  - pictorial reproduction
  - highlighting
  - special effects.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to applying basic airbrush techniques to vehicle body panels, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - handling and storing paint materials
  - using tools and equipment
  - using approved drying area
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- key features of stencils and graphic design techniques used with vehicle substrates
- types and application methods for airbrushing automotive paints and designs, including correct use of positive air feed masks
- airbrushing application techniques, including:
  - types and main parts of airbrush

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  - types of masking and stencil mediums
  - types of clear top coat refinishing materials
- types and use of airbrush materials and equipment, including:
  - set-up, operation and maintenance of spray guns
  - airbrush spray gun operation and spraying techniques
  - paint cleaning materials and equipment
  - spray gun cleaning methods
- procedures for protecting vehicle and components when airbrushing
- procedures for final inspection of airbrush application.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of task.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the airbrushing activities that they have carried out on vehicle substrates, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required to apply airbrushing
- clear top coat refinishing materials
- airbrush spray guns and paint materials
- two different vehicle body panels or substrates specified in the performance evidence requiring the application of basic airbrush designs
- airbrush spray guns
- tools, equipment and materials appropriate for applying basic airbrush techniques to vehicle body panels.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTS001 Fabricate wooden components for vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to fabricate wooden components, plugs or moulds for use on vehicles with wooden body frames or parts, using wood material and templates. It involves preparing for the task, selecting and using wood materials and wood working equipment to fabricate wooden components, and completing workplace processes and documentation.

It applies to those working in the automotive service and body industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical – Fabrication

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to fabricate	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
wooden component	1.2 Materials are selected and inspected for quality 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Wood working tools and equipment*** and personal protective equipment (PPE) are selected and checked for serviceability 1.5 Work area is prepared and work is planned to identify fabrication techniques, minimise waste, and use time efficiently
2. Fabricate wooden component	2.1 Drawings and specifications are interpreted and measurements taken to prepare templates to fabricate component 2.2 Wooden component is fabricated using appropriate techniques and adhesives according to workplace instructions and ***safety and environmental requirements***, and without causing damage to equipment or machinery
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition and

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Skills	Description
	subtraction, to calculate: • template measurements from drawings and specifications • quantities of required materials.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist wood working tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Wood working tools and equipment must include:	• measuring equipment • hand tools • machine wood working equipment • gluing and screwing equipment.
Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • selecting and using PPE • using safety data sheets (SDS) for adhesives • handling and storing wooden components • using tools and equipment • environmental requirements, including procedures for storing and disposing of waste materials and adhesives.

Unit Mapping Information

Equivalent to AURVTS3001 Carry out wood working operations for fabrication

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTS001 Fabricate wooden components for vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- fabricate two of the following wooden vehicle components:
  - plugs
  - seat frame
  - door frame
  - timber dash panel.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to fabricating wooden components for vehicles, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for adhesives
  - handling and storing wooden components
  - using tools and equipment
- environmental requirements, including procedures for storing and disposing of waste materials and adhesives
- wood fabrication procedures and techniques, including:
  - types and application of wood working tools and equipment
  - types and features of wood
  - types and application of adhesives
  - measuring techniques

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  - patterns and template development
- procedures for final inspection of fabricated wooden component.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the wooden components they have fabricated for vehicles, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required for wood working
- SDS for adhesives
- materials relevant to fabrication of wooden components
- wooden vehicle components specified in the performance evidence requiring fabricating
- tools, equipment and materials appropriate for fabricating wooden components for vehicles.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTS002 Repair wooden components in vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to repair plugs, moulds, frames and flooring in vehicle bodies using wood materials. It involves preparing for the task, selecting and using wood materials and wood working equipment to repair plugs, moulds, frames and flooring components, and completing workplace processes and documentation.

It applies to those working in the automotive service and body repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical – Fabrication

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for work	1.1 Job requirements are determined from workplace instructions 1.2 Materials are selected and inspected for quality

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Wood working tools and equipment*** and personal protective equipment (PPE) are selected and checked for serviceability 1.5 Work area is prepared and work is planned to identify methods for repairing wooden components, minimise waste, and use time efficiently
2. Carry out repair procedures	2.1 Damaged component identified for repair is removed from vehicle, and damage or fault is assessed 2.2 Repairs to damaged component are carried out using manufacturer approved techniques, repair materials and equipment according to workplace procedures and ***safety and environmental requirements*** 2.3 Repairs to wooden component are completed without causing damage to equipment, machinery or vehicle 2.4 Repaired component is reinstalled and finished according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.

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Skills	Description
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• interpret job specifications and measurements • calculate material quantities.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• assess damage or faults to wooden components to determine repair method.
Technology skills to:	• use specialist wood working tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Wood working tools and equipment must include:	• measuring equipment • hand tools • machine wood working equipment • adhesive and screwing equipment.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • handling and storing vehicle plugs, moulds, frames and flooring
	  • using tools and equipment
	• environmental requirements, including procedures for storing and disposing of waste materials and adhesives.

Unit Mapping Information

Equivalent to AURVTS3002 Repair plugs, moulds, frames and flooring using wood materials

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Links

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Assessment Requirements for AURVTS002 Repair wooden components in vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- repair two of the following vehicle components using wood materials:
  - plugs
  - moulds
  - frames
  - flooring.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to repairing wooden components in vehicles, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - handling and storing vehicle plugs, moulds, frames and flooring
  - using tools and equipment
- environmental requirements, including procedures for storing and disposing of waste materials and adhesives
- wood repair procedures and techniques, including:
  - types and application of wood working tools and equipment
  - types and features of wood
  - types and application of adhesives
  - measuring techniques
  - patterns and template development

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- procedures for final inspection of repaired wooden plugs, moulds, frames and flooring components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to wooden vehicle components that they have repaired, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required to repair wooden components
- materials required to repair wooden components
- wooden components specified in the performance evidence requiring repair
- tools, equipment and materials appropriate for repairing wooden components in vehicles.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTS006 Fabricate automotive and marine trim components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to measure, mark out, cut and fabricate automotive or marine trim components to given specifications. It involves preparing for the task, selecting and using specialist tools and equipment, checking material quality, calculating material quantity, assembling and trimming components, identifying fabrication defects, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Fabrication

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to fabricate trim	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
components	1.2 Materials are selected and inspected for quality 1.3 Hazards associated with the work are identified and risks are managed 1.4 Fabrication tools and equipment and personal protective equipment (PPE) are selected and checked for serviceability 1.5 Work is planned to identify methods for fabricating trim components, minimise waste, and use time effectively
2. Perform fabrication	2.1 Components are ***fabricated*** to specification according to workplace instructions, customer and job requirements, and ***safety and environmental requirements*** 2.2 Fabricated component is inspected against workplace quality requirements and fabrication defects are reported to appropriate personnel according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure fabrication work meets workplace expectations and component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition and

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Skills	Description
	subtraction, to calculate: • fitting measurements • quantities and size of materials.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist trimming and fabrication equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Fabrication must include:	• measuring, marking and cutting • sewing, fastening and assembling.
Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: • selecting and using PPE • using specialist tools and equipment • environmental requirements, including procedures for storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTS2006 Carry out fabrication of components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTS006 Fabricate automotive and marine trim components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- fabricate three different automotive or marine trim components to specifications, including one seat assembly.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to fabricating automotive and marine trim components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
- environmental requirements, including procedures for storing and disposing of waste materials
- types, operation and basic maintenance of fabrication equipment
- type of trim materials and their applications
- trim component fabrication methods and techniques, including:
  - material marking out and cutting techniques
  - fastening and assembly methods, including:
    - gluing
    - bonding
    - sewing
    - riveting
    - welding
- procedures for identifying material defects

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- procedures for protecting vehicle or vessel and components during trim work
- procedures for final inspection of fabricated trim component.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the trim components that they have fabricated, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- PPE to fabricate trim components
- materials to fabricate trim components
- three different automotive or marine components requiring trim
- tools, equipment and materials appropriate for fabricating trim components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT001 Carry out sewing repairs to automotive and marine trim

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to complete hand and machine sewing repairs to automotive or marine trim. It involves preparing for the task, selecting and using specialist sewing tools and equipment, selecting materials, calculating material quantity, conducting final inspection to ensure work meets workplace expectations and quality requirements, and repaired trim component is presented ready for use, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Trimming and Upholstery

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to carry out sewing repairs	1.1 Job requirements are determined from workplace instructions 1.2 Trim repair ***materials*** are selected and checked for quality 1.3 Trim material quantities are calculated according to job requirements 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including sewing machines and personal protective equipment (PPE), are selected and checked for serviceability 1.6 Work is planned to identify ***sewing repair methods***, minimise waste, and use time effectively
2. Mark out and complete sewing repairs	2.1 Sewing repairs are marked out according to material specifications and workplace procedures 2.2 Sewing repairs are completed according to job requirements, ***safety and environmental requirements***, and workplace quality standards and timeframes
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and quality requirements, and repaired trim component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate measurements and required quantity of materials • use rulers and tape measure to mark out materials.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use sewing machines and specialist equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Materials must include:	• trim • cloth • leather • carpet • sewing materials.
Sewing repair methods must include:	• hand sewing • machine sewing.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	• environmental requirements, including procedures for storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURVTT2001 Carry out sewing repairs and alterations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT001 Carry out sewing repairs to automotive and marine trim

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out sewing repairs on three different automotive or marine trim components, including:
  - one seat repair
  - one carpet repair.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to carrying out sewing repairs to automotive and marine trim, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
- environmental requirements, including procedures for storing and disposing of waste materials
- types and uses of trim sewing materials
- types and uses of sewing tools and equipment, including sewing machine operation and basic maintenance
- sewing repair methods and techniques, including hand and machine sewing methods and techniques
- procedures for identifying and addressing material defects
- quality standards relating to sewing repair work
- procedures for final inspection of sewing repair.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the sewing repairs that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- PPE required for sewing repairs
- trim materials to carry out sewing repairs
- three different automotive or marine trim components requiring sewing repairs
- tools, equipment and materials appropriate for carrying out sewing repairs.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT002 Carry out repairs and alterations to automotive and marine trim

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to measure, cut, repair, alter and attach automotive or marine covers or components. It involves preparing for the task, selecting and using specialist tools and equipment, selecting materials, checking material quality, carrying out trim repairs or alterations, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical – Trimming and Upholstery

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to carry out trim	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
repairs and alterations	1.2 Repair materials are selected and inspected for quality 1.3 Hazards associated with the work are identified and risks are managed 1.4 Trimming ***tools and equipment*** and personal protective equipment (PPE) are selected and checked for serviceability 1.5 Trim materials are matched, measured and cut according to job requirements 1.6 Work area is prepared and work is planned to minimise waste and use time efficiently
2. Repair and attach trim	2.1 Repaired trim materials are pre-fitted and checked for alignment and appearance 2.2 Repair and alteration of trim components are carried out according to manufacturer specifications, workplace procedures and customer requirements 2.3 Tools and equipment are used according to workplace procedures and ***safety and environmental requirements***
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and repaired component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills	• clarify instructions and procedures

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Skills	Description
to:	• clearly report quality issues and job outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to:
	  • calculate material quantities
	  • estimate repair times
	• use material measuring equipment.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist sewing tools, measuring equipment and workplace technology.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include:	• sewing machines • specialist trimming hand tools and equipment.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	• environmental requirements, including procedures for storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTT2002 Carry out trim repairs and alterations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT002 Carry out repairs and alterations to automotive and marine trim

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- repair or alter three different automotive or marine covers and trim, in which the work must involve:
  - one repair
  - one alteration.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to carrying out repairs and alterations to automotive and marine trim, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
- environmental requirements, including procedures for storing and disposing of waste materials
- types and uses of trim material and trimming tools and equipment
- trim repair and alteration techniques and procedures suitable for different types of trim materials, including:
  - detecting faults
  - trim measuring and cutting
  - trim removal and replacement
  - trim repair and alteration
- procedures for final inspection of trim repair and alterations.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the automotive and marine trim that they have repaired and altered, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- PPE to carry out trim repairs and alterations
- trim materials to carry out trim repairs and alterations
- three different vehicle or marine covers or trim requiring repairs or alterations
- sewing machine
- tools, equipment and materials appropriate for carrying out trim repairs and alterations.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT003 Remove and replace automotive and marine interior trim components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to safely remove and replace interior trim in an automotive or marine application. It involves preparing for the task, selecting and using tools and equipment, removing and replacing interior components, conducting a final inspection of work, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical – Trimming and Upholstery

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
replace interior trim component	1.2 Original equipment manufacturer (OEM) specifications and workplace procedures are accessed and interpreted 1.3 Interior trim component to be removed and replaced is identified and inspected for damage 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.6 Work is planned to minimise waste and use time efficiently
2. Remove, store and replace trim	2.1 Trim component is removed according to OEM specifications, workplace procedures, and ***safety and environmental requirements***, and without causing damage to vehicle or other components 2.2 Trim component is safely stored in preparation for replacement 2.3 Trim component is replaced according to OEM specifications, workplace procedures, and safety and environmental requirements, and without causing damage to vehicle or other components
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• identify tool size using metric and imperial systems of measurements.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist removal and installation equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	  • manual handling components
	• environmental requirements, including procedures for storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTT2003 Remove and replace vehicle interior trim components

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT003 Remove and replace automotive and marine interior trim components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove, store and replace trim components for three different vehicles or vessels, in which the work must involve:
  - door trims
  - carpets
  - head lining.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and replacing automotive and marine interior trim components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
  - manual handling components
- environmental requirements, including procedures for storing and disposing of waste materials
- original equipment manufacturer (OEM) specifications for removing and replacing automotive or marine interior trim components
- types and uses of specialist tools and equipment needed to remove and replace interior trim components
- trim component removal and replacement techniques and procedures, including procedures for protecting vehicle or vessel and components

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- procedures for final inspection of automotive or marine interior trim components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles or vessels in which they removed and replaced interior trim, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- PPE required to remove and replace vehicle or vessel interior trim components
- OEM specifications and manuals
- three different vehicles or vessels requiring the removal and replacement of interior trim components specified in the performance evidence
- tools, equipment and materials appropriate for removing and replacing automotive and marine interior trim.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT004 Trim vehicle components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to calculate, mark, cut, sew and attach trim material to vehicle components. It involves preparing for the task, selecting and using specialist tools and equipment, selecting trim materials and checking their quality, developing material patterns, fabricating, assembling and attaching trim to components and checking trim against specifications, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for work	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.2 Trim materials are selected and inspected for quality 1.3 Safety data sheets (SDS) are sourced and interpreted 1.4 Hazards associated with the work are identified and risks are managed 1.5 ***Trim tools and equipment*** and personal protective equipment (PPE) are selected and checked for serviceability 1.6 Work is planned to minimise waste and use time efficiently
2. Measure, mark, cut and fabricate trim	2.1 Material patterns are developed and prepared for use 2.2 Trim materials are measured, marked and cut according to workplace instructions and prepared pattern 2.3 Trimming tools and equipment are used according to workplace procedures and ***safety and environmental requirements*** 2.4 Trim is fabricated according to work instructions and job requirements
3. Attach trim	3.1 Trim materials are fitted and checked for alignment, appearance and quality according to job specifications and workplace instructions 3.2 Trim materials are attached to vehicle component and checked against specifications
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable materials is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate:
	  • fitting measurements
	  • quantities of required materials

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist trim tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Trim tools and equipment must include:	• sewing machines • hand tools.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using SDS for trim materials
	  • using specialist tools and equipment
	  • manual handling techniques
	• environmental requirements, including procedures for storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTT2004 Trim vehicle components

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Links

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Assessment Requirements for AURVTT004 Trim vehicle components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- manufacture and attach two different trim components.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to trimming vehicle components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for trim materials
  - using specialist tools and equipment
  - manual handling techniques
- environmental requirements, including procedures for storing and disposing of waste materials
- types and uses of trimming materials, including detection of faults and repair defects
- types and uses of specialist tools and equipment needed to manufacture and attach trim components
- techniques and procedures for trimming components, including:
  - measuring, marking and cutting
  - sewing techniques
  - trim removal and replacement
  - trim cleaning
- procedures for protecting vehicle and components when trimming components
- procedures for final inspection of trimmed component.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle components that they have trimmed, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- PPE required to trim components
- SDS for trim materials
- vehicle or components for trimming
- tools, equipment and materials appropriate for trimming vehicle components.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT005 Select trim and fabric materials

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to select trim and fabric materials and determine attaching methods. It involves preparing for the task, selecting materials for specific applications, checking material quality, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for work	1.1 Job requirements are determined from workplace instructions 1.2 Hazards associated with the work are identified and risks are

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	managed 1.3 Work area is prepared and a range of trim materials is gathered for inspection according to workplace instructions
2. Select and inspect materials	2.1 Trim materials are selected against job and customer requirements 2.2 Trim materials are checked for quality and reported if faulty
3. Determine attachment methods	3.1 Attachment material information is sourced and interpreted 3.2 Attachment options are analysed and those most appropriate to the circumstances are selected 3.3 Selected option is reported according to workplace procedures
4. Complete work processes	4.1 Final material selection is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures

Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate:
	  • quantities of trim and materials
	  • fitting measurements in metric and imperial systems
	• measure accurately using metric and imperial measuring equipment.

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Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

There is no Range of Conditions for this unit.

Unit Mapping Information

Equivalent to AURVTT2005 Select and apply trim and fabric materials

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT005 Select trim and fabric materials

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria and foundation skills:

- select trim and fabric materials for three different vehicle or marine components.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- environmental requirements, including procedures for storing and disposing of waste materials
- procedures for selecting trim and fabric materials for automotive and marine applications
- types and application of trims, including:
  - polyvinyl chloride (PVC)
  - leather
  - fabric
- procedures for identifying trim material faults and defects
- procedures for selecting attachment options, including types and application of attachments, including sewing, rivets, adhesives and stapling
- techniques and procedures to apply trim materials, including:
  - measuring, marking and cutting
  - fabrication and sewing techniques
  - trim attachment
  - trim cleaning.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the trim and fabric materials that they have selected, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- PPE requirements to apply trim materials
- workplace instructions
- trim and fabric materials
- trim attachment consumables
- three different vehicle or vessel components requiring trim material matching
- tools, equipment and materials appropriate for selecting trim materials.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT006 Apply trimming adhesives

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to select and apply trim adhesives. It involves preparing for the task, including preparing surfaces, selecting and applying adhesives to specifications, removing excess adhesive, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to apply trim adhesives	1.1 Job requirements are determined from workplace instructions 1.2 Adhesive specifications, application processes, and relevant

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	safety data sheets (SDS) are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.5 Work area is prepared and work is planned to minimise waste and use time efficiently
2. Prepare surfaces and apply adhesive	2.1 Adhesive is selected according to manufacturer recommendation, trim and material type 2.2 Surfaces are cleaned and prepared according to adhesive manufacturer specifications and SDS requirements 2.3 Adhesive is applied to surfaces using adhesive application tools and equipment and according to workplace procedures and ***safety and environmental requirements***
3. Complete work processes	3.1 Final adhesive selection is made and presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures.

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Skills	Description

Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate:
	  • adhesive quantities
	  • ratios for mixing adhesives
	• measure accurately using metric and imperial measuring equipment.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist adhesive tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	  • using SDS for adhesives
	  • handling and storing adhesives
	• environmental requirements, including procedures for storing and disposing of waste materials and adhesives.

Unit Mapping Information

Equivalent to AURVTT2006 Select and apply trim and fabric adhesives

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT006 Apply trimming adhesives

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- apply trim adhesives to three different vehicle or vessel components, in which the work must involve:
  - one vehicle or marine fixed cover
  - one vehicle or marine carpet section.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to applying trimming adhesives, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
  - using safety data sheets (SDS) for adhesives
  - handling and storing adhesives
- environmental requirements, including procedures for storing and disposing of waste adhesives
- types and uses of specialist trimming tools and equipment
- adhesive types required for different materials, including:
  - polyvinyl chloride (PVC)
  - fabric
  - leather
- adhesive application techniques, including:
  - surface preparation

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  - application
  - cleaning
- procedures for protecting vehicle and components when applying trim adhesives.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have applied trim adhesives, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- SDS for adhesives
- PPE required to apply trim adhesives
- adhesives for PVC, fabric and leather
- PVC, fabric and leather materials
- three different vehicles or vessels with components requiring trimming
- tools, equipment and materials appropriate for applying trim, materials and adhesives.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT007 Clean plastic trim and fittings of vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to clean a vehicle's plastic trim and fittings. It involves preparing for the task, selecting and using cleaning equipment and material, cleaning the trim and fittings, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to clean plastic trim and fittings	1.1 Job requirements are determined from workplace instructions 1.2 Cleaning ***materials*** are selected according to vehicle and product

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	manufacturer recommendations and workplace procedures 1.3 Hazards associated with the work are identified and risks are managed 1.4 Cleaning equipment, including personal protective equipment (PPE), is selected and checked for serviceability 1.5 Work is planned to identify manual or machine methods for cleaning plastic trim and fittings, minimise waste, and use time efficiently
2. Carry out cleaning activities	2.1 Cleaning materials are prepared and applied according to workplace procedures, safety data sheet (SDS) information, and ***safety and environmental requirements*** 2.2 Plastic trim and fittings are cleaned according to workplace instructions and customer requirements, and without causing damage to vehicle or components
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

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Skills	Description

Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate:
	  • cleaning product quantities
	  • ratios for mixing cleaning products.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist cleaning tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Materials must include:	• cloths • brushes • cleaning products.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using SDS for cleaning products
	  • using cleaning equipment
	  • handling and storing cleaning products
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTT2007 Clean and finish plastic trim and fittings

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT007 Clean plastic trim and fittings of vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- clean the internal and external plastic trim and fittings of three different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to cleaning plastic trim and fittings of vehicles, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for cleaning products
  - using cleaning equipment
  - handling and storing cleaning products
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- types of vehicle plastic trim and fittings
- cleaning products required for different trims and fittings
- types and use of cleaning equipment
- procedures for final inspection of cleaned vehicle trim and fittings.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle trim and fittings that they have cleaned, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive detailing workplace or simulated workplace
- workplace instructions
- PPE required to clean plastic trim and fittings
- SDS for cleaning products
- cleaning materials
- three different vehicles with plastic trim and fittings requiring cleaning
- cleaning tools, equipment and materials appropriate for cleaning vehicle plastic trim and fittings.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT008 Clean vehicle interior trim

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to clean vehicle interior trim, including vehicle seats and floor coverings. It involves preparing for the task, selecting and using cleaning equipment, products and material, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to clean vehicle interior	1.1 Job requirements are determined from workplace instructions 1.2 ***Cleaning information*** is sourced and interpreted

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Cleaning ***materials*** are identified, calculated and prepared according to vehicle manufacturer recommendations 1.4 Hazards associated with the work are identified and risks are managed 1.5 Cleaning tools and equipment, including personal protective equipment (PPE), are identified and inspected for serviceability 1.6 Work is planned to identify methods for cleaning vehicle interior, minimise waste, and use time effectively
2. Undertake cleaning activities	2.1 Interior trim and seats are cleaned according to workplace instructions, customer requirements, and ***safety and environmental requirements*** 2.2 Cleaning and finishing materials and tools are used according to trim and seat fabric type and without causing damage to vehicle or components 2.3 Manual or machine assisted cleaning methods are used according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills	• clarify instructions and procedures

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Skills	Description
to:	• clearly report issues or outcomes.
Numeracy skills to:	• use basic mathematical operations to calculate cleaning material quantities • measure and mix cleaning fluids using ratios.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist cleaning equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Cleaning information must include:	• manufacturer specifications • safety data sheets (SDS) • workplace procedures.
Materials must include:	• cloths • cleaning products • finishing agents.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using SDS for cleaning products and finishing agents
	  • using tools and equipment
	  • handling and storing cleaning products
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials and cleaning agents.

Unit Mapping Information

Equivalent to AURVTT2008 Clean and finish vehicle interior trim and seats

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT008 Clean vehicle interior trim

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- clean and finish the following interiors of three different vehicles, including:
  - seats
  - carpets
  - mats
  - dash
  - arm rests
  - consoles
  - door trim.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to cleaning vehicle interior trim, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for cleaning products and finishing agents
  - using tools and equipment
  - handling and storing cleaning products
- environmental requirements, including procedures for trapping, storing and disposing of waste materials and cleaning agents
- types of vehicle interior trim and components specified in the performance evidence
- cleaning and finishing products and equipment application methods and techniques

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- procedures for protecting vehicle interiors while cleaning
- procedures for final inspection of cleaned interior.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle interior trim that they have cleaned, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive workplace or simulated workplace
- workplace instructions
- PPE required to clean vehicle interiors
- SDS for cleaning products and finishing agents
- cleaning and finishing materials
- three different vehicles with the interiors specified in the performance evidence requiring cleaning
- tools, equipment and materials appropriate for cleaning vehicle interior trim.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT009 Remove and replace vehicle and vessel seats and fittings

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and replace seats and fittings of vehicles and vessels according to manufacturer removal and replacement instructions. It involves preparing for the task, selecting and using specialist tools and equipment, storing seats and fittings, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
replace seats and fittings	1.2 Removal and replacement information is sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Hand tools and equipment and personal protective equipment (PPE) are selected and checked for serviceability 1.5 Work area and storage racks are prepared according to workplace procedures 1.6 Work is planned to minimise waste and use time efficiently
2. Remove and replace seats and fittings	2.1 Seats and fittings are removed using manufacturer-approved methods, tools and equipment, according to ***safety and environmental requirements***, and without causing damage to vehicle or components 2.2 Seats and fittings are stored safely until needed for replacement 2.3 Seats and fittings are replaced according to manufacturer replacement instructions and without causing damage to vehicle, ensuring all bolts and fasteners are used and tensioned
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 3.2 Authorised personnel are informed of work outcome according to workplace procedures 3.3 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.4 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.5 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• identify seat and trim fastener codes and numbers.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist removal and installation equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	  • manual handling techniques
	• environmental requirements, including procedures for storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTT2009 Remove and replace seats and internal fittings

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT009 Remove and replace vehicle and vessel seats and fittings

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove and replace three different vehicle or vessel front and rear seats and fittings.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and replacing vehicle and vessel seats and fittings, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
  - manual handling techniques
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- manufacturer instructions for removing and replacing seats and fittings, including:
  - electric seats
  - seat massage
  - heated seats
  - memory seats
- types and use of workplace tools and equipment required for removing and replacing seats and fittings
- vehicle and marine electric seat disconnection and reconnection procedures
- procedures and requirements for safely storing seat and trim components

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- procedures for protecting vehicle and components when removing and replacing seats and fittings
- procedures for final inspection and testing of replaced seats and fittings.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles or vessels where they have removed and replaced seats and fittings on, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- PPE required to remove and replace seats and fittings
- three different vehicle or vessel front and rear seats and fittings to be removed and replaced
- seat and fitting storage racks
- tools, equipment and materials appropriate for removing and replacing vehicle or vessel seats and fittings.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT010 Remove and manufacture or repair vehicle head lining

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and manufacture or repair a vehicle head lining. It involves preparing for the task, selecting and using specialist tools and equipment, selecting materials and checking their quality, manufacturing or repairing a vehicle head lining, replacing it according to manufacturer specifications, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for work	1.1 Job requirements are determined from workplace instructions 1.2 Manufacturer specifications and workplace procedures are accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.5 Work is planned to minimise waste and use time efficiently
2. Remove head lining	2.1 Fittings are removed in preparation for removing head lining 2.2 Head lining is removed using vehicle manufacturer recommended tools, equipment and procedures 2.3 Activities are completed according to ***safety and environmental requirements*** and without causing damage to vehicle or components
3. Manufacture or repair head lining	3.1 Materials are selected according to workplace instructions and customer requirements 3.2 Manufacturing, repair and attachment methods are identified 3.3 Templates are produced from workplace instructions or head lining sample 3.4 Materials are measured, marked and cut according to workplace instructions 3.5 Head lining is manufactured or repaired according to workplace procedures and safety and environmental requirements
4. Replace head lining	4.1 Head lining is replaced using vehicle manufacturer recommended tools, equipment and procedures 4.2 Fittings are replaced after installing head lining according to safety and environmental requirements and without causing damage to vehicle or components
5. Complete work processes	5.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 5.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate:
	  • head lining fitting measurements
	  • quantities of required materials.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist removal and installation equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	  • manual handling techniques
	• environmental requirements, including procedures for storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURVTT3010 Remove and replace vehicle head lining

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT010 Remove and manufacture or repair vehicle head lining

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove one vehicle head lining, in which the work must involve the following fittings:
  - interior lights
  - sun shields
  - rear vision mirrors
  - door rubbers
- manufacture or repair and then replace the above head lining.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and manufacturing or repairing vehicle head lining, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
  - manual handling techniques
- environmental requirements, including procedures for storing and disposing of waste materials
- types of head linings and materials
- types and use of tools and equipment required for removing, manufacturing or repairing, and replacing vehicle head lining, including:
  - trimming tools and equipment
  - sewing machines

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- methods and procedures for removing and replacing vehicle head lining, including:
  - electrical disconnection and reconnection
  - removal and installation of fittings, including:
    - interior lights
    - sun shields
    - rear vision mirrors
    - door rubbers
- head lining attachment techniques
- head lining repair or manufacturing methods
- procedures for protecting vehicle and components when removing, manufacturing or repairing, and replacing vehicle head lining
- procedures for final inspection of manufactured or repaired and fitted vehicle head lining.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicles where they have removed, manufactured or repaired, and then replaced vehicle head lining, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive trimming workplace or simulated workplace
- workplace instructions
- PPE required to manufacture or repair head lining
- vehicle with head lining requiring replacement or repair
- tools, equipment and materials appropriate for removing, manufacturing or repairing, and then replacing vehicle head lining.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT012 Conduct sewing operations

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to conduct sewing operations using hand and machine techniques. It involves preparing for the task, selecting and using specialist sewing tools and equipment, selecting materials, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry. It includes a range of automotive or marine trimming applications.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to carry out	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
sewing work	1.2 Components are identified and materials selected and inspected for quality 1.3 Hazards associated with the work are identified and risks are managed 1.4 Sewing tools and equipment and personal protective equipment (PPE) are selected and checked for serviceability 1.5 Work area is prepared and work is planned to minimise waste and use time efficiently
2. Sew automotive or marine components and trim	2.1 Sewing machine is set up correctly and adjustments are made during sewing operations 2.2 Hand and machine sewing operations are carried out according to workplace instructions and ***safety and environmental requirements*** 2.3 Sewing activities are completed within workplace timeframes
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

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Skills	Description

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to:
	  • calculate quantities of required materials
	  • interpret metric and imperial measurements, including stitch per inch.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist sewing equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	• environmental requirements, including procedures for storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTT3012 Carry out sewing operations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT012 Conduct sewing operations

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- machine sew two of the following vehicle or marine components or trim:
  - seat cover for bucket or bench seat
  - door trims
  - carpets
  - head linings
- hand sew one steering wheel cover.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to sewing operations, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
- environmental requirements, including procedures for storing and disposing of waste materials
- types of sewing tools, equipment and consumables and their uses
- hand and machine sewing methods and techniques
- final inspection procedures for sewing work.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle or vessel components or trim that they have sewed, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- PPE to carry out sewing
- components and trim specified in the performance evidence requiring machine and hand sewing
- materials and consumables required to carry out sewing operations
- sewing tools, equipment and materials appropriate for carrying out sewing operations.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT013 Fabricate and fit loose and fitted covers to vehicle seats and components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to measure, mark out and cut materials in order to fabricate and fit covers to vehicle seats and components. It involves preparing for the task, selecting and using specialist tools and equipment, selecting materials and checking their quality, following manufacturer and customer instructions, inspecting finished work, and completing workplace processes and documentation.

It applies to those working in the automotive trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to fabricate loose and fitted covers	1.1 Job requirements are determined from workplace instructions 1.2 Materials are selected and inspected for quality and quantities are calculated 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment, including personal protective equipment (PPE), are selected for appropriate ***fabrication methods*** and checked for serviceability 1.5 Work area is prepared and work is planned to minimise waste and use time efficiently
2. Measure, mark out and cut materials	2.1 Templates and specialist tools and equipment are selected and used according to ***safety and environmental requirements*** 2.2 Materials are marked out and cut according to patterns, templates workplace instructions, manufacturer specifications and fitting requirements
3. Fabricate, install and fasten covers	3.1 Covers are fabricated and assembled according to job requirements and workplace instructions 3.2 Covers are installed and fastened without causing damage to vehicle or components 3.3 Fitted covers are checked for alignment and quality according to job requirements, workplace procedures and manufacturer specifications
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate:
	  • fitting measurements
	  • quantities of required materials.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Fabrication methods must include:	• measuring, marking out and cutting • machine sewing • fastening, shaping and gluing • assembling and fitting.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	  • manual handling vehicle components
	• environmental requirements, including procedures for storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTT3013 Fabricate loose and fitted covers

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT013 Fabricate and fit loose and fitted covers to vehicle seats and components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- fabricate and assemble one loose and one fitted cover to the seats of two different vehicles.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to fabricating and fitting loose and fitted covers to vehicle seats and components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
  - manual handling vehicle components
- environmental requirements, including procedures for storing and disposing of waste materials
- type, use and basic maintenance of tools and equipment
- designs and styles of different types of covers
- types of materials and consumables and their applications, including:
  - fabrics
  - fasteners
  - adhesives
- methods and techniques for fabricating loose and fitted covers, including:
  - material selection
  - planning

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  - measuring
  - marking out
  - cutting
  - sewing
- methods and techniques for fitting and fastening loose and fitted covers
- procedures for protecting vehicle and components when fitting covers
- procedures for final inspection of fabricated and fitted covers.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the loose and fitted covers that they have fabricated and fitted, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- PPE required to fabricate and fit loose and fitted covers
- materials required to fabricate and fit loose and fitted covers
- two different vehicles requiring seat covers to be fitted
- tools, equipment and materials appropriate for fabricating and fitting loose and fitted covers.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT014 Fabricate and fit marine covers

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to fabricate and fit covers for different marine applications. It involves preparing for the task, selecting and using specialist tools and equipment, selecting materials and checking their quality, following manufacturer and customer instructions, inspecting final work, and completing workplace processes and documentation.

It applies to those working in the marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to fabricate	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
marine covers	1.2 Materials are selected and inspected for quality, and quantities are calculated 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment, including personal protective equipment (PPE), are selected for appropriate ***fabrication methods*** and checked for serviceability 1.5 Work area is prepared and work is planned to minimise waste and use time efficiently
2. Measure, mark out and cut materials	2.1 Templates and specialist tools and equipment are selected and used according to ***safety and environmental requirements*** 2.2 Materials are marked out and cut according to patterns, templates workplace instructions, manufacturer specifications and fitting requirements
3. Fabricate, fit and fasten marine covers	3.1 Marine covers are fabricated and assembled according to job requirements and workplace instructions 3.2 Marine covers are fitted and fastened without causing damage to vehicle or components 3.3 Fitted marine covers are checked for alignment and quality according to job requirements, workplace procedures and manufacturer specifications
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate:
	  • fitting measurements
	  • quantities of required materials.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Fabrication methods must include:	• measuring, marking out and cutting • machine sewing • reinforcing and edge finishing • fastening, shaping and gluing • assembling and fitting.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	  • manually handling marine components
	• environmental requirements, including procedures for storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURVTT3014 Fabricate marine covers

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT014 Fabricate and fit marine covers

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- fabricate and fit two marine covers to job specifications.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to fabricating and fitting marine covers, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
  - manually handling marine components
- environmental requirements, including procedures for storing and disposing of waste materials
- type, use and basic maintenance of tools and equipment
- designs and styles of different types of covers
- types of materials and consumables and their applications, including:
  - fabrics
  - fasteners
  - adhesives
- methods and techniques for fabricating marine covers, including:
  - material selection
  - planning
  - measuring
  - marking out

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  - cutting
  - sewing
  - making up and assembly
  - fitting and fastening
- methods and techniques for fitting and fastening marine covers
- procedures for protecting vessel and components when fitting covers
- procedures for final inspection of fabricated and fitted marine covers.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the marine covers that they have fabricated and fitted, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine trimming workplace or simulated workplace
- workplace instructions
- PPE required to fabricate and fit marine covers
- materials required to fabricate and fit marine covers
- marine vessel or components that require covers to be fabricated and fitted
- tools, equipment and materials appropriate for fabricating and fitting marine covers.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT015 Fabricate and install canvas products for automotive and marine components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to fabricate and install canvas covers and products in automotive and marine components. It involves preparing for the task, selecting and using specialist tools and equipment, selecting materials and checking their quality, measuring and cutting canvas products, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to fabricate canvas products	1.1 Job requirements are determined from workplace instructions 1.2 Canvas materials are selected and inspected for quality and quantities are calculated 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment, including personal protective equipment (PPE), are selected for appropriate ***fabrication methods*** and checked for serviceability 1.5 Work area is prepared and work is planned to minimise waste and use time efficiently
2. Cut, fabricate and install canvas covers and products	2.1 Materials are measured, marked out and cut according to job requirements and workplace instructions 2.2 Canvas products are fabricated using canvas sewing techniques and according to job requirements, workplace procedures, and ***safety and environmental requirements*** 2.3 Canvas products are assembled according to workplace procedures and safety and environmental requirements 2.4 Installation methods for canvas products are identified and applied according to work instructions
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate:
	  • fitting measurements
	  • quantities of canvas materials
	• use tape measure to take measurements.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Fabrication methods must include:	• measuring, marking out and cutting canvas material • machine sewing • reinforcing and edge finishing • assembling and installing.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	  • manual handling components
	• environmental requirements, including procedures for storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURVTT3015 Fabricate canvas products

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT015 Fabricate and install canvas products for automotive and marine components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- fabricate and install one canvas product for an automotive or marine application.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to fabricating and installing canvas products for automotive and marine components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
  - manual handling components
- environmental requirements, including procedures for storing and disposing of waste materials
- types and operation of trimming and fabrication tools and equipment
- designs and styles of different types of canvas products
- types, characteristics and applications of:
  - canvas materials
  - fasteners
- methods and techniques for fabricating and installing canvas products, including:
  - selecting canvas
  - planning
  - measuring
  - marking out

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  - cutting
  - sewing
- procedures for protecting vehicle and components when installing products
- procedures for final inspection of fabricated and installed canvas products.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the canvas products that they have fabricated and installed, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- PPE required to fabricate and install canvas products
- materials required to fabricate and install canvas products
- one vehicle or vessel requiring a canvas product to be fabricated and installed
- tools, equipment and materials appropriate for fabricating and installing canvas products.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT017 Fabricate and install automotive and marine floor coverings

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to measure, mark out, and cut, and fabricate and install automotive or marine floor coverings. It involves preparing for the task, selecting and using specialist tools and equipment, selecting materials and checking their quality, following manufacturer and customer instructions, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for fabrication of floor coverings	1.1 Job requirements are determined from workplace instructions 1.2 ***Fabrication methods*** and ***materials*** are selected and inspected for quality and quantities are calculated 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.5 Work is planned to minimise waste and use time efficiently
2. Measure, fabricate and install floor coverings	2.1 Work area is prepared and fabrication tools and equipment are set up for job requirement 2.2 Materials are measured, marked out and cut according to floor covering specifications and patterns, workplace procedures, and ***safety and environmental requirements*** 2.3 Floor coverings are fabricated and fabrication process is monitored to ensure specifications, customer requirements, and workplace procedures are met 2.4 Defects, quality issues and non-conformances are reported to authorised personnel according to workplace procedures 2.5 Installation and fitting of floor coverings, insulation and fastenings are completed according to workplace procedures and job requirements
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate fabrication of materials .
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Fabrication methods must include:	• measuring • marking out • cutting • machine sewing • overlocking • fastening and fitting.
Materials must include:	• heel mats • carpet • insulation.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	  • manually handling materials
	• environmental requirements, including procedures for storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURVTT3017 Fabricate and install floor coverings

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT017 Fabricate and install automotive and marine floor coverings

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- fabricate and install one complete automotive or marine floor covering to specification.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to fabricating and installing automotive or marine floor coverings, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
  - manually handling materials
- environmental requirements, including procedures for storing and disposing of waste materials
- type, use and basic maintenance of sewing and trimming tools and equipment
- types of floor coverings and insulation and their application
- methods and techniques for fabricating and installing floor coverings, including:
  - selecting materials
  - planning
  - measuring
  - marking out
  - cutting
  - sewing
  - using adhesives

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  - fitting and fastening
- procedures for protecting vehicle and components when installing floor coverings
- procedures for final inspection of fabricated and installed floor coverings.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle or vessel floor coverings that they have fabricated and installed, e.g. work order.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- PPE required to fabricate and install floor coverings
- materials required to fabricate and install floor coverings
- one vehicle or vessel requiring floor coverings to be installed
- tools, equipment and materials appropriate for fabricating and installing floor coverings.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT018 Fabricate and install automotive and marine soft top hoods

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to measure, mark out and cut, and fabricate and install vehicle or marine soft top hoods. It involves preparing for the task, selecting and using specialist tools and equipment, selecting materials and checking their quality, fabricating and assembling soft top hoods according to vehicle manufacturer specifications and customer instructions, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Trimming and Upholstery

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to fabricate soft top hood	1.1 Job requirements are determined from workplace instructions 1.2 Original equipment manufacturer (OEM) specifications and workplace procedures are accessed and interpreted 1.3 ***Materials*** required to fabricate soft top hoods are selected and inspected for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.6 Work is planned to minimise waste and use time efficiently
2. Undertake fabrication and installation activities	2.1 Material is measured, marked out and cut using patterns and templates and according to OEM specifications and workplace instructions 2.2 Specialist tools and equipment are used according to ***safety and environmental requirements*** 2.3 Soft top hood is fabricated and assembled according to job requirements, workplace procedures, and safety and environmental requirements 2.4 Soft top hood is installed and fastened according to workplace procedures and without causing damage to vehicle or components 2.5 Installation and fastening are checked for correct operational requirements
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle or vessel is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate:
	  • quantities of required materials
	  • fitting measurements.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Materials must include:	• adhesives • vinyl • fabric • clear plastic • soft top fasteners.

Safety and environmental requirements must include**:**	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	  • manually handling materials
	• environmental requirements, including procedures for storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURVTT3018 Fabricate and install soft tops hoods

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT018 Fabricate and install automotive and marine soft top hoods

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- fabricate and install one vehicle or vessel soft top hood to specifications.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to fabricating and installing automotive and marine soft top hoods, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
  - manually handling materials
- environmental requirements, including procedures for storing and disposing of waste materials
- types of hoods and soft tops, including:
  - soft top materials
  - methods of operation
  - component parts
  - types of windows
- type, use and basic maintenance of trimming tools and equipment
- original equipment manufacturer (OEM) specifications relating to soft top hoods
- types of materials and consumables and their applications, including:
  - fabrics
  - fasteners

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  - adhesives
- methods and techniques for fabricating soft top hoods, including:
  - selecting material
  - planning
  - measuring
  - marking out
  - cutting
  - sewing
  - using adhesives
  - making up and assembling
  - fitting and fastening
- quality requirements relating to fabricating and installing vehicle soft top hoods
- procedures for protecting vehicle and components when installing soft top hoods
- procedures for final inspection of fabricated and installed soft top hoods.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle or vessel soft top hoods they have fabricated and installed, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- OEM procedures to fabricate and install soft top hoods
- PPE required to fabricate and install soft top hoods
- materials to fabricate and install soft top hoods
- one vehicle or vessel requiring a soft top hood to be fabricated and installed
- tools, equipment and materials appropriate for fabricating and installing soft top hoods.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT019 Fabricate and install automotive and marine frames, canopies and side curtains

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to measure, mark out and cut, fabricate and install automotive and marine frames, canopies and side curtains to manufacturer specifications and customer instructions. It involves preparing for the task, selecting and using specialist tools and equipment, selecting materials and checking their quality, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for fabrication	1.1 Job requirements are determined from workplace instructions 1.2 Frame, components and ***materials*** are selected and inspected for quality 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.5 Work is planned to minimise waste and use time efficiently
2. Undertake fabrication and installation activities	2.1 Material is measured, marked out and cut according to job requirements and workplace instructions 2.2 Specialist tools and equipment are used according to ***safety and environmental requirements*** 2.3 Frame, canopies and side curtains are fabricated and assembled according to job requirements, workplace procedures, and safety and environmental requirements 2.4 Frame, canopies and side curtains are installed and fastened according to workplace procedures and without causing damage to vehicle, vessel or components 2.5 Installation and fastening are checked for correct operational requirements
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and vehicle or vessel is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate:
	  • quantities of required materials
	  • fitting measurements.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Materials must include:	• adhesives • polyvinyl chloride (PVC) • canvas • aluminium or stainless steel tubing • fasteners • bindings and zippers.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment
	  • manual handling components
	• environmental requirements, including procedures for storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURVTT3019 Fabricate and install canopies and curtains

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT019 Fabricate and install automotive and marine frames, canopies and side curtains

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- fabricate one automotive or marine frame, canopy and side curtain to specifications.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to fabricating and installing automotive and marine frames, canopies and side curtains, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment
  - manual handling components
- environmental requirements, including procedures for storing and disposing of waste materials.
- types of frames, canopies and side curtains, including:
  - materials
  - methods of operation
  - component parts
- type, use and basic maintenance of sewing tools and equipment
- types of materials and consumables and their applications, including:
  - fabrics
  - fasteners
  - adhesives

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- methods and techniques for fabricating and installing frames, canopies and side curtains hoods, including:
  - selecting material
  - planning
  - measuring
  - marking out
  - cutting
  - sewing, including:
    - seams
    - attachments
    - bindings, zippers and pockets
  - using adhesives
  - fabricating and assembling frames, canopies and side curtains
  - fitting and fastening
- quality standards relating to fabricating and installing frames, canopies and side curtains
- procedures for protecting vehicle, vessel and components when installing frames, canopies and side curtains
- procedures for final inspection of fabricated and installed frames, canopies and side curtains.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the frames, canopies and side curtains that they have fabricated and installed, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- PPE required to fabricate and install a frame, canopy and side curtain

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- materials to fabricate and install a frame, canopy and side curtain
- automotive or marine vessel or simulated jig requiring frame, canopy and side curtain to be fabricated and installed
- tools, equipment and materials appropriate for fabricating and installing frames, canopies and side curtains.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT020 Select and use leather in automotive and marine trimming

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to identify, select and use leather in the trimming of automotive and marine components. It involves preparing for the task, selecting and using specialist tools and equipment, checking leather quality, calculating required quantities, matching leather, fabricating and attaching covers and trim to manufacturer and customer instructions, and completing workplace processes and documentation.

It applies to those working in the automotive and marine trimming industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Trimming and Upholstery

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to use leather trimming	1.1 Job requirements are determined from workplace instructions 1.2 Adhesive safety data sheet (SDS) information is accessed and interpreted 1.3 ***Materials*** are selected and inspected for quality, and quantities are calculated 1.4 Hazards associated with the work are identified and risks are managed 1.5 ***Trimming tools and equipment*** and personal protective equipment (PPE) are selected and checked for serviceability 1.6 Work and cutting are planned to minimise waste and use time efficiently
2. Fabricate leather components	2.1 ***Leather features and characteristics*** are checked carefully prior to cutting and are matched against workplace instructions 2.2 Leather pieces are laid and marked out in sequence according to developed cutting plan and ***safety and environmental requirements*** 2.3 Leather pieces are cut according to cutting plan and using predetermined measurements or patterns 2.4 Leather is sewn to produce required range of trimming components
3. Attach leather to vehicle, vessel or component	3.1 Leather component is positioned and checked prior to being attached to ensure correct fit 3.2 Leather is attached using most appropriate method and according to workplace procedures and job requirement
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to calculate:
	  • fitting measurements in metric and imperial systems
	  • quantities of leather and materials.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Materials must include:	• leather hides • patterns • trimming materials • cleaning materials • adhesives.
Trimming tools and equipment must include:	• sewing machines • trimming hand and power tools.
Leather features and characteristics must include:	• natural markings • colour variation • flexibility

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	• corrected grain • quality • wear quality and stress.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using SDS information relating to adhesives
	  • using specialist tools and equipment
	  • manually handling leather materials
	• environmental requirements, including procedures for storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTT3020 Select and use leather in trimming

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT020 Select and use leather in automotive and marine trimming

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- fabricate one leather seat cover and one trim component for a vehicle or vessel.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to selecting and using leather in automotive and marine trimming, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheet (SDS) information relating to adhesives
  - using specialist tools and equipment
  - manually handling leather materials
- environmental requirements, including procedures for storing and disposing of waste materials
- technical characteristics and features of leather and criteria for their selection
- procedures for tanning leather
- type, use and basic maintenance of sewing and trimming tools and equipment
- methods and techniques for fabricating leather, including:
  - selecting and preparing leather hide
  - planning
  - measuring and calculating leather quantities
  - marking out and using patterns
  - cutting

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  - sewing
  - using adhesives
- fitting and fastening
- procedures for cleaning leather
- procedures for protecting vehicle, vessel and components when using trimming
- procedures for final inspection of leather trimming components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the automotive and marine trimming they have made using leather, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- PPE required to fabricate leather components
- leather and materials to carry out trimming activities
- component of one vehicle or vessel requiring leather trim
- tools, equipment and materials appropriate for selecting and using leather in automotive and marine trimming.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTT021 Select and apply adhesives in automotive and marine service and repair work

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to select and use adhesives with a range of automotive and marine surfaces. It involves preparing for the task, selecting and using tools and equipment, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The adhesives include those used with automotive, marine, motorcycle, aircraft or recreational vehicle materials.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Trimming and Upholstery

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for work	1.1 Job requirements are determined from workplace instructions 1.2 ***Adhesive information*** is accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.5 Work area is prepared and work is planned to minimise waste and use time efficiently
2. Select adhesive	2.1 Appropriate adhesive for specific automotive materials is selected according to manufacturer specifications and workplace procedures 2.2 Specific safety data sheet (SDS) information for selected adhesive is identified and followed
3. Apply adhesive to prepared surfaces	3.1 Surfaces are cleaned and prepared according to adhesive manufacturer specifications 3.2 Adhesives are applied according to workplace procedures and ***safety and environmental requirements***, and without causing damage to system or components
4. Complete work processes	4.1 Final adhesive selection is made and presented for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.

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Skills	Description
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist adhesive tools and equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Adhesive information must include:	• adhesive-specific specifications • adhesive-specific application and removal instructions and processes • SDS information • manufacturer specifications.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using SDS for adhesives
	  • using specialist tools and equipment
	  • storing adhesives
	• environmental requirements, including procedures for trapping, storing and disposing of adhesives and waste materials.

Unit Mapping Information

Equivalent to AURVTT3021 Select and use adhesives

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTT021 Select and apply adhesives in automotive and marine service and repair work

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- select and apply adhesives to three different automotive or marine components, in which the work must involve one door trim.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to selecting and applying adhesives in automotive and marine service and repair work, including procedures for:
  - selecting and using PPE
  - using safety data sheets (SDS) for adhesives
  - using specialist tools and equipment
  - storing adhesives
- environmental requirements, including procedures for trapping, storing and disposing of adhesives and waste materials
- adhesive manufacturer specifications
- adhesive types required for different automotive and marine materials
- adhesive application techniques and procedures, including:
  - surface preparation
  - application
  - cleaning and disposal
- procedures for protecting vehicle, vessel and components when applying adhesives
- procedures for final inspection of applied adhesive.

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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the adhesives they have selected and used on vehicles, vessels and components, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive or marine trimming workplace or simulated workplace
- workplace instructions
- instructions relating to the selection and use of adhesives
- SDS for adhesives
- adhesives
- PPE required to use adhesives
- three different automotive or marine components as specified in the performance evidence requiring the use of adhesives
- tools, equipment and materials appropriate for applying adhesives.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTV001 Remove, replace and test non-electrical vehicle components and accessories

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove, replace, fit and test non-electrical vehicle components and accessories. It involves preparing for the task, selecting and using specialist tools and equipment, removing, installing and testing non-electrical components and accessories during vehicle servicing or vehicle repair, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Accessories

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove, replace and test non-electrical components and accessories	1.1 Job requirements are determined from workplace instructions 1.2 Manufacturer specifications and workplace instructions are sourced and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment, including personal protective equipment (PPE), are identified and checked for serviceability 1.5 Work is planned to sequence activities, minimise waste, and use time efficiently
2. Remove and replace non-electrical components and accessories	2.1 Work area is prepared and tools and equipment are set up according to workplace procedures and ***safety and environmental requirements*** 2.2 Non-electrical components and accessories are identified and removed without causing damage to vehicle or components 2.3 Non-electrical components and accessories are refitted according to manufacturer specifications and workplace instructions
3. Test non-electrical components and accessories	3.1 Test information is accessed and interpreted from manufacturer specifications 3.2 Testing of non-electrical components and accessories is completed according to manufacturer specifications and without causing damage to systems or components
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and components and accessories are presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate specifications and relevant information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report issues or outcomes.
Numeracy skills to:	• interpret data in test results • take measurements accurately and interpret tolerances.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist tools and equipment to remove, replace and test non-electrical components and accessories.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • handling and storing non-electrical components and accessories
	  • using tools and equipment
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTV2001 Remove, replace, fit and test components and accessories

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTV001 Remove, replace and test non-electrical vehicle components and accessories

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- remove, replace, fit and test three different non-electrical components and accessories, including two of the following:
  - bonnet and boot locking system
  - side window assemblies
  - door key locks
  - wiper blade assemblies
  - seat assemblies.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing, replacing and testing non-electrical vehicle components and accessories, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - handling and storing non-electrical components and accessories
  - using tools and equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- vehicle manufacturer specifications and repair and service manuals
- removal, replacement and testing methods and techniques, including:
  - type and use of components and accessories

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  - procedures to remove, replace, fit and test a range of non-electrical components and accessories
- procedures for final inspection and testing of fitted non-electrical components and accessories.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the non-electrical components that they have removed, replaced and tested, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- vehicle manufacturer specifications and repair and service manuals
- PPE required to remove, replace and test non-electrical vehicle components and accessories
- vehicles requiring the non-electrical components and accessories specified in the performance evidence to be removed, replaced and tested
- tools, equipment and materials appropriate for removing, replacing and testing non-electrical vehicle components and accessories.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTW001 Carry out manual metal arc welding on components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to prepare and weld components using the manual metal arc welding (MMAW) process. It involves preparing for the task, selecting, setting up and operating MMAW equipment, identifying and selecting welding electrodes appropriate to welding requirements, selecting and using suitable personal protective equipment (PPE), performing welding to required standard and specifications, inspecting weld quality, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Plan and prepare to weld component	1.1 Job requirements are determined from workplace instructions 1.2 Welding electrodes, weld size, type and sequence, and quantity of materials are identified 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Tools and equipment*** are selected and checked for serviceability 1.5 Work is planned to minimise waste and use time efficiently
2. Weld materials using MMAW	2.1 Welding equipment is set up and used according to workplace procedures and ***safety and environmental requirements*** 2.2 Distortion prevention measures are identified and adjusted as required 2.3 Test runs are conducted according to workplace instructions and quality requirements 2.4 Materials are welded using MMAW process to required specifications
3. Check welds	3.1 Weld quality and specifications are confirmed by non-destructive inspection 3.2 Weld defects are identified, prepared for re-welding as required, and appropriate personnel are notified
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• identify and set welding machine settings • identify welding rod specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify weld defects, quality issues and potential problems associated with MMAW process and refer problems to appropriate person.
Technology skills to:	• use specialist MMAW equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include:	• PPE • MMAW equipment • MMAW electrodes and materials • protective screens and fume extraction system.

Safety and environmental requirements must include:	• work health and safety (WHS), and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE when working with MMAW equipment, including approved welding helmet
	  • using specialist welding tools and equipment
	  • using protective screens and fume extraction system
	  • manually handling components and MMAW equipment
	  • identifying and controlling hazards
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURVTW2001 Carry out manual metal arc welding procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTW001 Carry out manual metal arc welding on components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out manual metal arc welding (MMAW), including:
  - three bead runs, 150 mm long
  - three pad welds, 150 mm long
  - three butt welds, 150 mm long
  - three lap welds, 150 mm long.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS), and occupational health and safety (OHS) requirements relating to carrying out manual metal arc welding on components, including procedures for:
  - selecting and using personal protective equipment (PPE) when working with MMAW equipment, including approved welding helmet
  - using specialist welding tools and equipment
  - using protective screens and fume extraction system
  - manually handling components and MMAW equipment
  - identifying and controlling hazards
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- hazards associated with MMAW, including:
  - arc eye and exposure to ultraviolet light
  - metal vapours, welding electrodes and welded components

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    - molten metal spatter and fire danger
- distortion control techniques, including:
    - bracing
    - pre-setting
    - tacking
    - bolting
    - clamping
    - jigs and fixtures
- material preparation techniques, including characteristics of different metal types
- procedures for setting up and operating MMAW equipment
    - methods and techniques for MMAW, including:
    - weld specifications
    - basic welding symbols
    - types of welding electrodes and their application
    - protection of vehicle electronics
    - weld inspection
    - identification and rectification of weld defects
- procedures for final inspection and testing of welded components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the MMAW that they have carried out, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required for MMAW
- components to be welded as specified in the performance evidence

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- welding materials and consumables
- MMAW equipment and operating instructions
- tools, equipment and materials appropriate for carrying out MMAW.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTW002 Carry out oxyacetylene brazing of components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out oxyacetylene brazing. It involves preparing for the task, selecting, setting up and operating an oxyacetylene welding plant, setting gas pressures, identifying and adjusting required flame appropriate to brazing requirements, selecting and using suitable personal protective equipment (PPE), performing oxyacetylene brazing to given specifications, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to braze components	1.1 Job requirements are determined from workplace instructions 1.2 Technical information is accessed and interpreted to enable brazing to be performed according to manufacturer specifications 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Tools and equipment***, including PPE, are selected and checked for serviceability 1.5 Work is planned to identify brazing methods, minimise waste, and use time efficiently
2. Complete brazing procedures	2.1 Oxyacetylene equipment is set up, gauges and working pressures are set, and flames are adjusted according to equipment manufacturer operating procedures and workplace procedures 2.2 Brazing operations are conducted according to job requirements, workplace procedures, and ***safety and environmental requirements*** 2.3 Brazing procedures are completed without causing damage to components or systems
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.

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Skills	Description
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• identify and set oxyacetylene gas working pressures.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist oxyacetylene equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include:	• oxyacetylene plant • hand tools • approved welding glasses.

Safety and environmental requirements must include:	• work health and safety (WHS), and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using specialist tools and equipment, including approved oxyacetylene brazing glasses
	  • manually handling components and oxyacetylene equipment
	  • identifying and controlling hazards
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTW2002 Carry out brazing procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTW002 Carry out oxyacetylene brazing of components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out oxyacetylene brazing procedures on the following:
  - butt joint of 1.00 mm steel, 150 mm long
  - fillet joint of 1.00 mm steel, 150 mm long
  - lap joint of 1.6 mm steel, 150 mm long
  - pipe joint of 1.6 mm steel, 50 mm diameter.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS), and occupational health and safety (OHS) requirements relating to carrying out oxyacetylene brazing of components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using specialist tools and equipment, including approved oxyacetylene brazing glasses
  - manually handling components and oxyacetylene equipment
  - identifying and controlling hazards
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- types and application of brazing materials, including fluxes and rods
- use and operation of oxyacetylene plant, including procedures for setting and adjusting pressure and gauges
- oxyacetylene flame identification and applications, including:
  - natural
  - carburising

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  - oxidising
- basic maintenance procedures for oxyacetylene equipment
- methods and techniques for oxyacetylene brazing
- procedures for reporting faults and material defects
- procedures for final inspection and testing of brazed components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the oxyacetylene brazing activities that they have carried out, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required to use oxyacetylene brazing equipment
- components to be brazed as specified in the performance evidence
- brazing equipment, consumables and materials
- oxyacetylene plant
- tools, equipment and materials appropriate for carrying out oxyacetylene brazing.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTW003 Carry out advanced gas metal arc welding on vehicle body sections

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out advanced gas metal arc welding (GMAW) to replace structural and non-structural vehicle body sections during vehicle body repair work. It involves preparing for the task, selecting and using GMAW equipment, setting gas flow pressures and welder settings, operating gas metal arc welder, selecting and using suitable personal protective equipment (PPE), inspecting and testing weld quality, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle body

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Plan and prepare to carry out advanced GMAW	1.1 Job requirements are determined from workplace instructions 1.2 ***Welding information*** is accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Tools and equipment*** are selected and checked for serviceability 1.5 Work area is prepared and work is planned to carry out GMAW, minimise waste, and use time efficiently
2. Weld using GMAW welder	2.1 GMAW equipment is prepared, set up and adjusted for specific welding job requirement according to manufacturer procedures and ***safety and environmental requirements*** 2.2 Weld test runs are conducted according to workplace instructions and weld specifications 2.3 Materials are welded using standard or inverter GMAW process to industry and original equipment manufacturer (OEM) or authorised agency standards
3. Check welds	3.1 Welds are cleaned using appropriate tools and techniques and according to workplace instructions 3.2 Weld specifications and quality requirements are checked and confirmed by visual inspection and destructive testing 3.3 Weld defects are identified are prepared for re-welding as required, and appropriate personnel are notified
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and components are presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• identify and set gas metal arc welder settings • identify weld measurements from job requirements.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify defects, quality issues and potential problems associated with GMAW processes and refer problems to appropriate person.
Technology skills to:	• use specialist GMAW equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Welding information must include:	• GMAW equipment operating procedures • national standards and codes of practice for welding • OEM or authorised agency standards • workplace procedures.
Tools and equipment must include:	• PPE • GMAW standard or inverter welders • GMAW consumables and materials • approved welding helmets • welding protective screens and fume extraction system.

Safety and environmental requirements must include:	• work health and safety (WHS), and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE when working with GMAW equipment, including approved welding helmet
	  • using specialist welding tools and equipment

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	• using protective screens and fume extraction system • manually handling vehicle components and GMAW equipment • identifying and controlling hazards • environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTW2003 Carry out gas metal arc welding procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTW003 Carry out advanced gas metal arc welding on vehicle body sections

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- use gas metal arc welding (GMAW) equipment to carry out the following welds:
  - three butt welds to 0.8 mm and 1.2 mm panel steel in the following positions:
    - down hand
    - vertical
    - horizontal
  - two lap welds to 0.8 mm and 1.2 mm panel steel in the following positions:
    - vertical
    - horizontal
  - three plug welds to 0.8 mm and 1.2 mm panel steel in the following positions:
    - down hand
    - vertical
    - horizontal
  - two butt welds on dissimilar material thickness 0.8 mm to 1.2 mm panel steel in the following positions:
    - down hand
    - horizontal.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

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- work health and safety (WHS), and occupational health and safety (OHS) requirements relating to carrying out advanced GMAW on vehicle body sections, including procedures for:
  - selecting and using personal protective equipment (PPE) when working with GMAW equipment, including approved welding helmet
  - using specialist welding tools and equipment
  - using protective screens and fume extraction system
  - manually handling vehicle components and GMAW equipment
  - identifying and controlling hazards
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- GMAW equipment manufacturer operating procedures
- original equipment manufacturer (OEM) or authorised agency welding standards
- material and consumable preparation techniques, including characteristics of different metal types, including high strength steels (HSS)
- procedures for setting up and operating GMAW equipment
- methods and techniques for advanced GMAW, including:
  - GMAW silicone bronze process
  - weld speed
  - weld angle
  - weld distance
  - welding positions
  - welding of dissimilar metal thicknesses
  - distortion control techniques
  - GMAW testing, including:
    - non-destructive inspection
    - destructive testing
  - identification and rectification of weld defects, including:
    - porosity
    - lack of penetration
    - excessive weld build-up
    - excess heat
    - undercut
    - weld distortion
    - heat affected zone
- procedures for safeguarding vehicle electronics during GMAW
- post-weld inspection procedures.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the GMAW that they have carried out, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- GMAW equipment operating instructions
- PPE required for GMAW
- body sections specified in the performance evidence requiring GMAW
- protective screens and fume extraction system
- standard or inverter GMAW equipment
- tools, equipment, consumables and materials appropriate for carrying out advanced GMAW.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTW004 Carry out tungsten inert gas welding

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out welding operations using tungsten inert gas (TIG) welding. It involves preparing for the task, selecting and using TIG welding equipment, setting gas flow pressures and welder settings, selecting and using suitable personal protective equipment (PPE), performing welding to given specifications, inspecting and testing weld quality, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle body

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Plan and prepare to	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
weld	1.2 ***Welding information*** is accessed and interpreted 1.3 Hazards associated with the work are identified and risks are managed 1.4 ***Tools and equipment*** are selected and checked for serviceability 1.5 Work area is prepared and work is planned to carry out TIG welding, minimise waste, and use time efficiently
2. Weld materials using TIG welder	2.1 TIG welding equipment is prepared, set up and adjusted for specific welding job requirement 2.2 TIG welding equipment is used according to manufacturer operating procedures and ***safety and environmental requirements*** 2.3 Weld test runs are conducted according to workplace instructions and weld specifications 2.4 Materials are welded using standard or inverter TIG process to industry standards
3. Check welds	3.1 Welds are cleaned using appropriate tools and techniques and according to workplace instructions 3.2 Weld specifications and quality requirements are checked and confirmed by non-destructive inspection 3.3 Weld defects are identified, prepared for re-welding as required, and appropriate personnel are notified
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• identify and set TIG welder settings • identify weld measurements from job requirements • measure material from specifications.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	• identify defects, quality issues and potential problems associated with TIG welding processes and refer problems to appropriate person.
Technology skills to:	• use specialist TIG equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Welding information must include:	• manufacturer operating procedures • national standards and codes of practice for welding • workplace procedures.
Tools and equipment must include:	• standard and inverter TIG equipment • tungsten electrodes • protective screens and fume extraction system • shielding gas • filler rods • PPE, including approved welding helmets.

Safety and environmental requirements must include:	• work health and safety (WHS), and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE for TIG welding, including approved welding helmets
	  • using specialist welding tools and equipment

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	• using protective screens and fume extraction system • manually handling vehicle components and TIG equipment • identifying and controlling hazards • environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTW2004 Carry out gas tungsten arc welding procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTW004 Carry out tungsten inert gas welding

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out tungsten inert gas (TIG) welding to the following material sections:
  - 150 mm long:
    - aluminium
    - steel
    - stainless steel
  - perform the above TIG welding in the following weld positions:
    - butt
    - outside corner
    - fillet
    - lap.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS), and occupational health and safety (OHS) requirements relating to carrying out TIG welding, including procedures for:
  - selecting and using personal protective equipment (PPE) for TIG welding, including approved welding helmets
  - using specialist welding tools and equipment
  - using protective screens and fume extraction system
  - manually handling vehicle components and TIG equipment
  - identifying and controlling hazards

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- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- different types of shielding gases used in TIG welding
- TIG manufacturer operating procedures
- material and consumable preparation techniques, including:
  - aluminium
  - steel
  - stainless steel
- procedures for setting up and operating TIG equipment
- methods and techniques for TIG welding, including:
  - welding positions:
    - butt
    - outside corner
    - fillet
    - lap
  - weld distortion and distortion control techniques
  - TIG testing procedures, including procedures for visual or non-destructive weld testing
- procedures for identifying and rectifying weld defects, including:
  - lack of penetration
  - excessive weld build-up
  - excess heat
  - undercut
  - heat affected zone
- procedures for protecting vehicle electronics during TIG welding
- procedures for final inspection of welded components.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to TIG welding that they have carried out, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

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The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- TIG equipment operating instructions
- PPE required for TIG welding
- protective screens and fume extraction system
- TIG welder and shielding gases
- TIG consumables
- materials specified in the performance evidence requiring TIG welding
- tools, equipment and materials appropriate for carrying out TIG welding.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTW005 Carry out spot welding

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out spot welding to replace structural and non-structural vehicle body sections according to original equipment manufacturer (OEM) or authorised agency procedures. It involves preparing for the task, selecting and using spot welding equipment, adjusting spot welder, operating spot welder, selecting and using suitable personal protective equipment (PPE), inspecting and testing weld quality, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for spot welding	1.1 Job requirements are determined from workplace instructions 1.2 ***Welding information*** is accessed and interpreted 1.3 Materials for repairs and replacements are selected and inspected for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools and equipment, including personal protective equipment (PPE), are selected and checked for serviceability 1.6 Work area is prepared and work is planned to conduct and test spot welds, minimise waste, and use time efficiently
2. Carry out spot welding activities	2.1 Surfaces are prepared for spot welding and anti-corrosion coatings are applied prior to spot welding 2.2 Welding equipment is set up and adjusted for specific welding job requirement following OEM or authorised agency repair guidelines 2.3 Sample spot welds are performed and destructive tested 2.4 Welding is carried out using welding equipment according to workplace procedures and ***safety and environmental requirements*** 2.5 Spot welding is completed without causing damage to components or systems 2.6 Completed spot welds are inspected for quality, and identified faults are rectified as required according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

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Skills	Description
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• identify and set welder settings.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use welding equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Welding information must include:	• OEM or authorised agency repair guidelines • workplace procedures.

Safety and environmental requirements must include:	• work health and safety (WHS), and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE for spot welding, including safety glasses
	  • using specialist welding tools and equipment
	  • using protective screens
	  • manually handling vehicle components and welding equipment
	  • identifying and controlling hazards
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURVTW2005 Carry out spot welding procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTW005 Carry out spot welding

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out spot welding to three different structural and non-structural vehicle body sections that include 50 spot welds to each
- undertake above work according to original equipment manufacturer (OEM) or authorised agency procedures, and cover different spot weld locations and spot weld sizes.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS), and occupational health and safety (OHS) requirements relating to carrying out spot welding, including procedures for:
  - selecting and using personal protective equipment (PPE) for spot welding, including safety glasses
  - using specialist welding tools and equipment
  - using protective screens
  - manually handling vehicle components and welding equipment
  - identifying and controlling hazards
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- OEM or authorised agency repair guidelines and quality requirements
- types of metals that can be spot welded
- types and operation of spot welding equipment covering:
  - set up
  - operation

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- methods and techniques for spot welding, including spot welding principles:
  - squeeze time
  - weld time
  - hold time
- procedures for destructive testing of spot welds
- types of spot weld defects, including:
  - shunting
  - splashing
  - insufficient heat
- procedures for final inspection of welding work.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the vehicle spot welds that they have carried out, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- OEM or authorised agency repair guidelines
- PPE required for spot welding
- spot welder that meets current industry standard
- spot welding consumables
- materials requiring spot welding
- vehicle body sections or components that require the spot welding specified in the performance evidence
- tools, equipment and materials appropriate for carrying out spot welding.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTW006 Carry out thermoplastic welding on vehicle trim components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to carry out thermoplastic welding on vehicle trim components. It involves preparing for the task, selecting and using thermoplastic welding equipment, setting equipment temperature, selecting and using suitable personal protective equipment (PPE), completing thermoplastic welds to vehicle manufacturer and customer specifications, finishing weld to pre-paint condition, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to weld	1.1 Job requirements are determined from workplace instructions 1.2 ***Welding information*** is accessed and interpreted 1.3 Materials for thermoplastic welding are selected and inspected for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 Thermoplastic welding tools and equipment and PPE are selected and checked for serviceability 1.6 Work is planned to minimise waste and use time efficiently
2. Carry out thermoplastic welding activities	2.1 Work area and fume extraction system are prepared ready for thermoplastic welding 2.2 Thermoplastic welding equipment is set up and adjusted for specific job requirement following vehicle manufacturer specification 2.3 Reinforcement methods are applied to ensure pre-damage strength 2.4 Thermoplastic welding equipment is used according to workplace procedures and ***safety and environmental requirements*** 2.5 Thermoplastic weld is finished to pre-paint condition and completed without causing damage to vehicle or components 2.6 Completed thermoplastic weld is inspected for quality and faults are identified and rectified as required and according to workplace procedures
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.

Numeracy skills to:	• use basic mathematical operations, including addition and subtraction, to:
	  • calculate weld time
	  • calculate thermoplastic welding measurements
	  • mark out thermoplastic weld on trim material
	  • calculate quantities of required materials
	• set and adjust thermoplastic welder settings.

Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist thermoplastic welding equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Welding information must include:	• vehicle manufacturer specifications • workplace procedures • thermoplastic safety data sheets (SDS).

Safety and environmental requirements must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE
	  • using SDS for thermoplastics
	  • manually handling vehicle components and welding

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	equipment • using tools and equipment • using fume extraction equipment • environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

Equivalent to AURVTW3006 Carry out thermoplastic welding procedures

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTW006 Carry out thermoplastic welding on vehicle trim components

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out thermoplastic welding procedures on three different vehicle trim components, in which the work must involve:
  - two different types of thermoplastics
  - one weld to a minimum of 50 mm in length.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to carrying out thermoplastic welding on vehicle trim components, including procedures for:
  - selecting and using personal protective equipment (PPE)
  - using safety data sheets (SDS) for thermoplastics
  - manually handling vehicle components and welding equipment
  - using tools and equipment
  - using fume extraction equipment
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- vehicle manufacturer thermoplastic specifications
- type and use of fume extraction systems
- types and characteristics of plastics used in thermoplastic welding
- types and operation of thermoplastic welding equipment, including:
  - set-up

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  - operation
- methods and techniques for thermoplastic welding
- procedures for protecting vehicle and components during weld
- procedures for final inspection of thermoplastic weld.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the thermoplastic welding that they have carried out, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- SDS for thermoplastics
- PPE required for thermoplastic welding
- fume extraction systems
- consumables and materials to weld thermoplastic
- three different vehicle trim components specified in the performance evidence requiring thermoplastic welding
- thermoplastic welder
- tools, equipment and materials appropriate for carrying out thermoplastic welding.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTW007 Carry out oxyacetylene thermal heating and cutting on vehicle body sections

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to set up an oxyacetylene plant, follow safety requirements, adjust gauges to recommended working pressures, and conduct thermal heating and cutting. It involves preparing for the task, identifying and adjusting flame appropriate to thermal heating and cutting requirements, selecting and using suitable personal protective equipment (PPE), performing oxyacetylene thermal heating and cutting to given instructions, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

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Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare for the job	1.1 Job requirements are determined from workplace instructions 1.2 Equipment manufacturer operating procedures and workplace procedures are accessed and interpreted 1.3 Materials for oxyacetylene thermal heating and cutting are selected and inspected for quality 1.4 Hazards associated with the work are identified and risks are managed 1.5 ***Tools and equipment*** and PPE are selected and checked for serviceability 1.6 Work is planned to minimise waste and use time efficiently
2. Conduct thermal heating and cutting activities	2.1 Work area is prepared according to workplace instructions and workplace procedures 2.2 Oxyacetylene equipment is set up, gauges and pressures are set, and flames are adjusted according to equipment manufacturer operating procedures and workplace procedures 2.3 Metal temperatures are monitored using a range of ***methods*** 2.4 Thermal heating and cutting are carried out according to ***safety and environmental requirements*** and without causing damage to vehicle or components
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, maintained and reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**

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Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes.
Numeracy skills to:	• identify and set oxyacetylene gas working pressure and gauges.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use specialist oxyacetylene equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Tools and equipment must include:	• oxyacetylene plant • thermal heating and cutting equipment.
Methods must include at least one of the following:	• colour • heat crayon • temperature gauge.

Safety and environmental requirements must include:	• work health and safety (WHS), and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE when working with oxyacetylene equipment
	  • using specialist thermal heating and cutting tools and equipment
	  • manually handling vehicle components and heating and cutting equipment
	  • identifying and controlling hazards
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

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Unit Mapping Information

Equivalent to AURVTW2007 Conduct oxy-acetylene, thermal heating and cutting

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTW007 Carry out oxyacetylene thermal heating and cutting on vehicle body sections

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out oxyacetylene thermal heating and cutting on three different vehicle body sections.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS), and occupational health and safety (OHS) requirements relating to carrying out oxyacetylene thermal heating and cutting on vehicle body sections, including procedures for:
  - selecting and using personal protective equipment (PPE) when working with oxyacetylene equipment
  - using specialist thermal heating and cutting tools and equipment
  - manually handling vehicle components and heating and cutting equipment
  - identifying and controlling hazards
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- equipment manufacturer operating procedures
- use and operation of oxyacetylene plant, including procedures for setting and adjusting pressure and gauges
- oxyacetylene flame identification and applications, including:
  - natural
  - carburising
  - oxidising

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- maintenance requirements of oxyacetylene equipment, including checking for oxyacetylene gas leaks from gauges, fittings and hoses
- methods, techniques and procedures for oxyacetylene thermal heating and cutting
- procedures for protecting vehicle and components during oxyacetylene thermal heating and cutting work
- procedures for final inspection of oxyacetylene thermal heating and cutting work.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having used oxyacetylene thermal heating and cutting on vehicle body sections, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required to conduct oxyacetylene thermal heating and cutting
- oxyacetylene plant
- three different vehicle body sections requiring thermal heating and cutting
- oxyacetylene safety equipment and operating instructions
- tools, equipment and materials appropriate for carrying out oxyacetylene thermal heating and cutting.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTW009 Carry out basic gas metal arc welding

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to prepare and weld components using the gas metal arc welding (GMAW) process. It involves preparing for the task, selecting and using GMAW equipment and personal protective equipment (PPE), setting gas flow pressures and welder settings, inspecting and testing weld quality, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to carry out	1.1 Job requirements are determined from workplace instructions

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Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
basic GMAW welding	1.2 PPE is chosen and prepared according to workplace procedures and ***safety and environmental requirements*** 1.3 Component and materials to be welded are cleaned and prepared according to workplace and safety requirements 1.4 Hazards associated with the work are identified and risks are managed 1.5 Welding tools and equipment are selected and checked for serviceability 1.6 Work is planned to minimise waste and use time efficiently
2. Weld component using GMAW	2.1 Welding equipment is set up according to workplace procedures 2.2 Welding is carried out using appropriate techniques according to workplace procedures and safety and environmental requirements, and without causing damage to components, systems or equipment 2.3 Welded component is checked to ensure conformity with job requirements
3. Complete work processes	3.1 Final inspection is made to ensure work meets workplace expectations and component is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 3.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 3.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	**Description**
Learning skills to:	• locate appropriate sources of information efficiently.
Writing skills to:	• legibly and accurately fill out workplace documentation.
Oral communication skills	• ask questions to clarify instructions and job requirements.

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Skills	Description
to:	
Numeracy skills to:	• measure components to check conformity with job requirements • interpret gauges and units of pressure.
Planning and organising skills to:	• plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	• use GMAW equipment.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Safety and environmental requirements must include:	• work health and safety (WHS), and occupational health and safety (OHS) requirements, including procedures for:
	  • selecting and using PPE when working with GMAW equipment, including approved welding helmet
	  • using specialist welding tools and equipment
	  • using protective screens and fume extraction system
	  • manually handling components and GMAW equipment
	  • identifying and controlling hazards
	• environmental requirements, including procedures for trapping, storing and disposing of waste materials.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTW009 Carry out basic gas metal arc welding

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- carry out gas metal arc welding (GMAW) on the following steel sections:
  - three butt welds, 150 mm long
  - three fillet welds, 150 mm long
  - three steel exhaust pipe butt welds.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS), and occupational health and safety (OHS) requirements relating to carrying out basic GMAW, including procedures for:
  - selecting and using personal protective equipment (PPE) when working with GMAW equipment, including approved welding helmet
  - using specialist welding tools and equipment
  - using protective screens and fume extraction system
  - manually handling components and GMAW equipment
  - identifying and controlling hazards
- environmental requirements, including procedures for trapping, storing and disposing of waste materials
- hazards associated with GMAW, including:
  - arc eye and exposure to ultraviolet light
  - molten metal spatter and fire danger
- GMAW principles, including:
  - process of using an electric arc to melt and join metal

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  - basic construction and operation of welding gun and wire feed unit
  - types and application of welding wire and shielding gases
  - properties and characteristics of metals to be welded
- types of welds, including:
  - butt welds
  - fillet welds
  - tee joints
  - corner joints
- procedures for protecting vehicle electronics during welding
- GMAW procedures, including:
  - component cleaning and preparation
  - welder current and voltage settings, gas flow rates, wire diameters and wire feed speed
  - wire stick out distance, gun angle between the work pieces and travel angle
- weld testing procedures, including non-destructive testing
- post-weld inspection procedures including, weld defects.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the basic GMAW they have carried out on components, e.g. work orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- PPE required for GMAW, including approved welding helmet
- GMAW welder
- steel sections requiring GMAW as specified in the performance evidence
- tools, equipment and materials appropriate for carrying out basic GMAW.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTW010 Set up and use welding equipment

Modification History

Release	Comment
Release 1	New unit of competency

Application

This unit describes the performance outcomes required to set up and use welding equipment to weld a range of materials. It requires the learner to plan and prepare the task; select and set up the correct welding equipment; weld using different welding techniques; and maintain the work area, tools and equipment.

It applies to those undertaking a Vocational Education and Training in Schools (VETiS) or pre-vocational qualification as preparation to entering the automotive service and repair or automotive manufacturing industry.

The unit is designed for use in a highly supervised context and is not suitable for use in a vocational qualification.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Competency Field

Vehicle Body

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Prepare to set up and use welding equipment	1.1 ***Safety and environmental requirements*** are sourced and interpreted

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ELEMENTS	PERFORMANCE CRITERIA
	1.2 Task instruction is interpreted and welding equipment, tools and materials needed to complete the task are determined 1.3 Manufacturer specifications and workplace procedures for use of welding equipment and associated materials are sourced and interpreted 1.4 Potential hazards and risks associated with task are identified and reported to workplace supervisor
2. Set up welding equipment and materials	2.1 Identified ***welding equipment, tools and materials*** are sourced and checked according to manufacturer specifications, workplace procedures and safety requirements 2.2 ***Welding equipment is set up*** according to manufacturer specifications, workplace procedures and safety requirements 2.3 Materials to be welded are identified and sourced
3. Use welding equipment	3.1 Welding equipment and materials set up for the task are checked prior to use according to manufacturer specifications, workplace procedures and safety requirements 3.2 Welding method and precautions outlined in the task instruction are interpreted and followed 3.3 ***Welding task and demonstration*** are carried out correctly according to manufacturer specifications, workplace procedures and safety requirements
4. Complete work processes	4.1 Final inspection is made to ensure work is completed according to task instruction and workplace standards 4.2 Welding equipment and tools are checked and stored in a condition ready for use according to workplace procedures, or tagged and reported where necessary 4.3 Problems with welding equipment or tools are reported according to workplace procedures 4.4 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored according to environmental requirements and workplace procedures 4.5 Workplace documentation is processed according to workplace procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate appropriate sources of welding information and procedures.
Reading skills to:	• select and interpret key information from manufacturer specifications, safety requirements and workplace procedures to set up and safely operate welding equipment • select and interpret key information from environmental requirements and workplace procedures to ensure a clean and safe work site.
Writing skills to:	• legibly and accurately fill out workplace documentation using correct industry terminology and conventions.
Oral communication skills to:	• participate effectively in verbal exchanges using questioning and active listening to request, clarify and clearly convey information.
Numeracy skills to:	• use basic mathematical operations, including addition, subtraction, multiplication, division to calculate percentages, and to calculate, calibrate and set equipment settings • read and interpret numerical information in welding equipment identification figures.
Planning and organising skills to:	• plan own work and prioritise actions to set up, undertake and complete the welding task.
Self-management skills to:	• recognise own limitations when selecting and using tools and welding equipment and seek timely advice.
Problem-solving skills to:	• identify hazards or potential hazards and take action to minimise risk • refer problems that cannot be readily resolved and seek assistance from workplace supervisor.
Technology skills to:	• set up and operate equipment and tools required to complete the welding task.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

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Safety and environmental requirements must include:	• information about key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
	  • use of personal protective equipment, including safety glasses and welding helmets, ear protections and safety footwear
	  • use of fume extraction system and welding bay
	  • disposal of welding material and wastes.

Welding equipment, tools and materials must include:	• one of the following welders: • metal arc welder • gas metal arc (MIG) welder • welding bay, curtains and fume extraction • fluxes, gases, welding rods and wire.
Setting up welding equipment must include:	• checking for leaks from gas bottles • checking and adjusting gas pressures • checking gas plant earth straps and clamps.

Welding task and demonstration must include:	• producing the following types of welds:
	  • butt weld
	  • lap weld
	  • bead run

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTW010 Set up and use welding equipment

Modification History

Release	Comment
Release 1	New unit of competency

Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria and foundation skills:

- set up and use welding equipment on at least two occasions.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- key aspects of work health and safety (WHS), occupational health and safety (OHS) and environmental requirements, including:
  - safety data sheets (SDS) and toxic chemicals and gases used and produced in welding
  - potential hazards and risks relating to welding, including fire hazards and ultraviolet skin and eye damage
  - use of personal protective equipment, including safety glasses and welding helmets, ear protections and safety footwear
  - use of fume extraction system and welding bay
  - disposal of welding material and wastes
- types of welding equipment, including:
  - metal arc
  - gas metal arc
- types of fluxes and gases used in welding
- welding equipment set-up procedures
- types and purposes of different welding techniques
- key steps in different welding techniques.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

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Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to welding activities, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application

The following resources must be made available:

- automotive workplace or simulated workplace
- welding equipment and tools, including at least one of the following:
- metal arc welder
- MIG welder
- welding bay, curtains and fume extraction
- fluxes, gases, welding rods and wire.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the skills and knowledge required to carry out basic welding, thermal heating and cutting operations. It involves preparing for the task, setting up and operating an oxyacetylene plant, setting gas pressures, identifying and adjusting flame appropriate for welding, thermal heating or cutting requirements, selecting and using suitable personal protective equipment (PPE), and completing workplace processes and documentation.

It applies to those working within the automotive service and repair industry.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical - Welding, Grinding, Machining and Soldering

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare for oxyacetylene welding, thermal heating and cutting	1.1 Identify job requirements from workplace instruction 1.2 Obtain and interpret technical information, workplace procedures, national standards and codes of practice, original equipment manufacturer (OEM) or authorised agency standards relating to oxyacetylene welding, thermal heating and cutting 1.3 Identify hazards and environmental issues associated with the work, assess potential risks and implement control measures from workplace health and safety requirements 1.4 Identify tools, equipment and materials required for the job and examine for serviceability

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	1.5 Plan welding, thermal heating or cutting activity to minimise waste and use time efficiently according to workplace expectations
2. Weld, thermal heat and cut using oxyacetylene plant	2.1 Carry out oxyacetylene gas working pressure adjustment and flame identification and setting according to workplace procedures, workplace health and safety and environmental requirements 2.2 Carry out welding, thermal heating, and cutting activity according to national standards and codes of practice, OEM or authorised agency standards, workplace procedures, workplace health and safety and environmental requirements
3. Complete work processes	3.1 Carry out final inspection to ensure work meets workplace expectations and component is ready for use 3.2 Clear work area and dispose of or recycle materials according to workplace procedures 3.3 Examine and store tools and equipment, ensuring faulty equipment is reported according to workplace procedures 3.4 Complete workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	• locate relevant sources of oxyacetylene welding, thermal heating and cutting information efficiently
Reading skills to:	• read and interpret information and ideas from workplace procedures, documentation, legislation and regulations on safe operating procedures for oxyacetylene welding, thermal heating and cutting
Writing skills to:	• legibly and accurately fill out workplace documentation
Oral communication skills to:	• clarify instructions and procedures • clearly report quality issues and job outcomes
Numeracy skills to:	• identify and set oxyacetylene gas working pressure and gauges
Planning and organising skills to:	• plan own work requirements • prioritise actions to achieve required outcomes • ensure tasks are completed within workplace timeframes

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Technology skills to:	• use specialist oxyacetylene equipment

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting (Release 1)	AURVTW008 Carry out oxyacetylene welding, thermal heating and cutting (Release 1)	Wording changes to ensure compliance with Standards for Training Packages. Removal of references to OHS requirements. Removal of range of conditions. Addition of minor elements to knowledge evidence and assessment conditions. Addition of Australian welding standard AS1554 to knowledge evidence and assessment conditions. Addition of assessor requirements.	Equivalent

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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Assessment Requirements for AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting

Modification History

Release	Comment
Release 1	New unit of competency.

Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate using oxyacetylene welding, thermal heating and cutting equipment to carry out welds that safely follow workplace procedures to meet required outcomes. This includes:

- carrying out oxyacetylene welding procedures on:
  - one butt joint, 150 mm long
  - one fillet joint, 150 mm long
  - one lap joint, 150 mm long
  - one exhaust pipe joint
- carrying out a thermal cutting task:
  - a straight cut of 150 mm long
- carrying out one of the following thermal heating tasks:
  - freeing a corroded bolt or fitting
  - freeing a corroded exhaust component.

Knowledge Evidence

The candidate must demonstrate the following knowledge:

Key policies and procedures for carrying out oxyacetylene welding, thermal heating and cutting, including:

- how to locate and interpret the following:
  - original equipment manufacturer (OEM) or authorised agency standards relating to oxyacetylene welding, thermal heating and cutting activity
  - Australian welding Standard AS1554
  - workplace instructions relating to carrying out oxyacetylene welding, thermal heating and cutting activity

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  - workplace procedures relating to carrying out oxyacetylene welding, thermal heating and cutting activity
- the following workplace health and safety requirements for carrying out oxyacetylene welding, thermal heating and cutting:
  - selecting and using personal protective equipment (PPE) to use oxyacetylene equipment, including approved oxyacetylene welding glasses
  - using specialist welding, thermal heating and cutting tools and equipment
  - manually handling components and welding, thermal heating and cutting equipment
  - identifying and controlling hazards
- the following environmental requirements for carrying out oxyacetylene welding, thermal heating and cutting:
  - procedures for trapping, storing and disposing of waste materials
- the following procedures for oxyacetylene welding
  - the use and operation of oxyacetylene plant, including setting and adjusting pressure and gauges
  - reporting faults and material defects
  - final inspection
- workplace housekeeping and documentation procedures

Technical information regarding oxyacetylene welding, thermal heating and cutting including:

- the types and characteristics of different metals
- the following oxyacetylene flame identification and adjustment processes:
  - natural
  - carburising
  - oxidising
- the following maintenance requirements of oxyacetylene equipment:
  - checking for oxyacetylene gas leaks from gauges, fittings and hoses
- methods and techniques for thermal heating and cutting
-

Assessment Conditions

The assessment must:

- include access to:
  - an automotive repair workplace or simulated workplace that reflects workplace conditions - where simulation is used, it must reflect real working conditions by modelling industry operating conditions and contingencies, as well as, using suitable facilities, equipment and resources
  - repair orders and workplace instructions relating to oxyacetylene welding, thermal heating and cutting activity

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  - workplace procedures relating to oxyacetylene welding, thermal heating and cutting activity
  - oxyacetylene welding, thermal heating and cutting equipment operating procedures
  - OEM or authorised agency standards relating to oxyacetylene welding, thermal heating and cutting
  - Australian welding Standard AS1554
  - PPE required to use oxyacetylene welding equipment
  - welding equipment, consumables and materials
  - oxyacetylene plant
  - tools, equipment and materials suitable for carrying out oxyacetylene welding, thermal heating and cutting
- be demonstrated in the workplace or in a simulated environment that reflects workplace conditions
- be conducted in a safe environment
- be assessed in compliance with relevant legislation and regulations; and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstance

Assessor Requirements

Assessors of this unit must:

- satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards
-

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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BSBCUE405 Survey stakeholders to gather and record information

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to prepare, survey and record relevant and required details of information collected according to organisational, legislative and regulatory requirements.

It applies to individuals who need to solve a defined range of unpredictable problems, analyse and evaluate information from a variety of sources, and who may provide leadership and guidance to others with some limited responsibility for the output of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Stakeholder Relations – Customer Engagement

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Obtain, record and analyse information	1.1 Identify information sources 1.2 Collect and document information according to organisational procedures and legislative and policy requirements 1.3 Collate, sort and analyse information collected in relation to purpose for which it is being obtained

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Ensure contents of recording forms and reports are in line with organisational requirements
2 Take and compile statements	2.1 Take comprehensive statements from sources appropriate to matter being investigated, according to organisational procedures and legislative and policy requirements 2.2 Use active listening when taking accurate statements from people
3 Conduct interviews	3.1 Plan, manage and conduct interviews to gather maximum information relevant to matter being examined 3.2 Treat all interviewees fairly and equitably 3.3 Conduct and record interviews according to legislation, policy and procedures
4 Use information and database systems	4.1 Enter information into database, adhering to data entry security procedures 4.2 Identify and use appropriate sources of information when recording data 4.3 Access and store information according to legislation, policy and procedures
5 Use interview and evidence recording equipment	5.1 Operate recording equipment according to legislation, policy and procedures 5.2 Produce records according to organisational requirements and procedures 5.3 Maintain equipment and usage logs in good order
6 Conduct follow-up activities	6.1 Identify and use communication links within organisation to exchange information 6.2 Assess relevance of information received in terms of its intended purpose 6.3 Dispose of irrelevant information according to legislation, policy and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.4, 4.2, 6.2	• Analyses and reviews a range of texts of varying complexity to determine relevance, accuracy and usefulness
Writing	1.2	• Documents a range of required information using structure, detailed language and format appropriate to purpose
Oral Communication	2.1, 2.2, 3.1, 3.3, 6.1	• Participates effectively in exchanges with others using structure and tone appropriate to gather and exchange information • Uses questioning techniques and active listening to confirm details and clarify responses
Navigate the world of work	1.2, 1.4, 2.1, 3.2, 3.3 4.3, 5.1, 5.2, 6.3	• Takes personal responsibility for adherence to legal/regulatory and organisational requirements when planning and undertaking information collection, review, storage, exchange and disposal
Interact with others	3.1, 3.2, 6.1	• Selects and uses appropriate conventions and protocols when communicating with internal and external stakeholders to build rapport and seek information
Get the work done	1.1, 1.3, 3.1, 4.1-4.3 5.1-5.3, 6.2	• Accepts responsibility for planning, organising and implementing routine and non-routine tasks to manage information collection processes, storage and disposal • Uses systematic, analytical processes to identify and gather relevant information to established criteria • Understands purposes, specific functions and key features of database systems and tools and operates them effectively to complete routine tasks • Uses digital recording technologies and systems safely, legally and ethically when gathering, storing, accessing and sharing information

Range of Conditions

This section specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Records must be:	• authorised, stored and assessed in line with organisational procedures • clear, audible and presentable.

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBCUE405 Survey stakeholders to gather and record information	BSBCCO405A Survey stakeholders to gather and record information	Updated to meet Standards for Training Packages Code changed to reflect industry practice	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBCUE405 Survey stakeholders to gather and record information

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- source, analyse and record information in compliance with organisational requirements
- use professional interview techniques to conduct and record interviews, including audiotapes and statements if applicable to role, according to relevant statutory, regulatory and legislative requirements
- access, store and dispose of information in compliance with legal and organisational requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify information types and their sources
- outline procedures and security measures for accessing, storing, retrieving and sharing data from databases
- describe rights of individuals in relation to conduct of interviews and compilation of statements
- identify statutory, regulatory and legislative requirements relating to surveying stakeholders
- outline use of evidence and contact recording technology.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the stakeholder relations – customer engagement field of work. This includes access to:

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- information and databases for analysis
- relevant legislation, standards and guidelines
- interviewees
- recording equipment.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBCUS501 Manage quality customer service

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify assessment conditions
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to develop strategies to manage organisational systems that ensure products and services are delivered and maintained to standards agreed by the organisation.

It applies to individuals who supervise the provision of quality customer service within an organisation's procedures framework by others. At this level, individuals must exercise considerable discretion and judgement, using a range of problem solving and decision making strategies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Stakeholder Relations – Customer Service

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Plan to meet internal and external customer	1.1 Investigate, identify, assess, and include the needs of customers in planning processes

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ELEMENT	PERFORMANCE CRITERIA
requirements	1.2 Ensure plans achieve the quality, time and cost specifications agreed with customers
2 Ensure delivery of quality products and services	2.1 Deliver products and services to customer specifications within organisation's business plan 2.2 Monitor team performance to consistently meet the organisation's quality and delivery standards 2.3 Help colleagues overcome difficulties in meeting customer service standards
3 Monitor, adjust and review customer service	3.1 Develop and use strategies to monitor progress in achieving product and/or service targets and standards 3.2 Develop and use strategies to obtain customer feedback to improve the provision of products and services 3.3 Develop, procure and use resources effectively to provide quality products and services to customers 3.4 Make decisions to overcome problems and to adapt customer services, products and service delivery in consultation with appropriate individuals and groups 3.5 Manage records, reports and recommendations within the organisation's systems and processes

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 3.1, 3.2, 3.3, 3.5	• Interprets and analyses textual information from a variety of sources and applies the knowledge that has been gained to evaluate standards for organisation's products and services
Writing	1.2, 3.1, 3.2, 3.3, 3.5	• Produces a range of text types to convey information, requirements or recommendations matching style of writing to purpose and audience
Oral Communication	1.1, 1.2, 2.1, 2.3, 3.2	• Clearly articulates systems and standards in a team environment using language suitable to diverse audiences • Uses listening and questioning techniques to obtain

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		feedback and confirm understanding
Numeracy	1.2	• Interprets and comprehends mathematical information in organisation's business and customer service plans.
Navigate the world of work	2.1, 2.2, 3.1, 3.5	• Recognises and applies organisational protocols and meets expectations associated with own work
Interact with others	1.1, 2.3, 3.4	• Identifies and uses appropriate conventions and protocols when communicating with colleagues and customers • Collaborates with others, taking into account their strengths and experience, to achieve desired outcomes • Provides support in field of expertise to team
Get the work done	1.1, 1.2, 2.1, 2.2, 3.1-3.5	• Develops and implements plans using logical processes and monitors and evaluates progress against stated goals • Accepts responsibility for addressing complex or non-routine difficulties, applying problem solving processes in determining a solution. • Uses digital technology to access, organise and present information in a format that meets requirements

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBCUS501 Manage quality customer service Release 2	BSBCUS501 Manage quality customer service Release 1	Updated to clarify assessment conditions	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBCUS501 Manage quality customer service

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0 Version created to clarify assessment conditions
Release 1	This version first released with Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- develop and manage organisational systems for quality customer service
- develop and review plans, policies and procedures for delivering and monitoring quality customer service
- implement policies and procedures to ensure quality customer service
- solve complex customer complaints and system problems that lead to poor customer service
- monitor and assist teams to meet customer service requirements
- develop, procure and use human and physical resources to support quality customer service delivery.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the legislative and regulatory context of the organisation relevant to customer service
- describe organisational policy and procedures for customer service including handling customer complaints
- identify service standards and best practice models
- summarise public relations and product promotion
- outline techniques for dealing with customers including customers with specific needs

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- explain techniques for solving complaints including the principles and techniques involved in the management and organisation of:
  - customer behaviour
  - customer needs research
  - customer relations
  - ongoing product and/or service quality
  - problem identification and resolution
  - quality customer service delivery
  - record keeping and management methods
  - strategies for monitoring, managing and introducing ways to improve customer service relationships
  - strategies to obtain customer feedback.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the customer service field of work and include access to:

- legislation, regulations and codes of practice related to customer service
- business technology
- workplace documentation and resources
- complex customer complaints
- case studies and, where possible, real situations
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBFIA303 Process accounts payable and receivable

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes skills and knowledge required to maintain accounts payable and accounts receivable records, including processing payments to creditors and handling overdue accounts receivable.

It applies to individuals employed in a range of work environments supporting the accounting functions and aspects of an enterprise. They may provide administrative support within an enterprise, or may be members of staff who have been delegated accounting responsibilities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Finance – Financial Administration

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Maintain financial journal systems	1.1 Check source documents for accuracy and appropriate authorisation 1.2 Refer errors and discrepancies in source documents for resolution in accordance with organisational policy and procedures 1.3 Enter transactions into cash and credit journal system in accordance with organisational policy and procedures and relevant

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ELEMENT	PERFORMANCE CRITERIA
	legislation and compliance requirements 1.4 Total credit journals in accordance with organisational policy and procedures
2 Prepare bank reconciliations	2.1 Check cash journals against bank statements to identify differences 2.2 Update cash journals with relevant data from bank statement/s 2.3 Identify discrepancies and refer to appropriate staff member, organisation or agency 2.4 Total cash journals in accordance with organisational policy and procedures 2.5 Prepare regular reconciliation reports within designated timelines
3 Maintain accounts payable and accounts receivable systems	3.1 Enter transactions into individual accounts payable and accounts receivable in accordance with organisational policy and procedures and accounting requirements 3.2 Prepare schedules of accounts payable and accounts receivable for reconciliation purposes and in accordance with organisational requirements 3.3 Reconcile accounts payable and accounts receivable schedules with journal data or general ledger and in accordance with organisational requirements
4 Process payments for accounts payable	4.1 Reconcile accounts payable statements with accounting records and in accordance with organisational policy and procedures 4.2 Check payment documentation for accuracy of information and discrepancies and rectify errors in accordance with organisational requirements
5 Prepare statements for accounts receivable	5.1 Produce and check accounts receivable statements for accuracy in accordance with organisational policy and procedures 5.2 Rectify discrepancies and statements despatched within designated timelines
6 Follow up outstanding accounts	6.1 Maintain accounts receivable ledger system in accordance with organisational requirements and to reflect current credit situation 6.2 Conduct aged-analysis of accounts receivable to identify outstanding accounts and to determine collection procedures in accordance with organisational requirements 6.3 Report or follow up outstanding accounts in accordance with

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ELEMENT	PERFORMANCE CRITERIA
	organisational policy and procedures 6.4 Monitor and review credit terms in accordance with credit policy and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.4, 2.1-2.5, 3.1-3.3, 4.1, 4.2, 5.1, 5.2, 6.1-6.4	• Interprets textual information from a range of sources to confirm all necessary job requirements • Checks documents to identify errors or discrepancies
Writing	1.2-1.4, 2.1-2.5, 3.1-3.3, 4.1, 4.2, 5.2, 6.1-6.4	• Prepares a range of clear documentation using relevant format, grammatical structure and vocabulary suitable to audience
Oral Communication	1.2, 2.3, 6.3	• Uses questioning and listening techniques to clarify information • Explains information clearly using appropriate terminology and tone
Numeracy	1.1-1.4, 2.1-2.5, 3.1-3.3, 4.1, 4.2, 5.1, 5.2, 6.1-6.4	• Uses a limited range of mathematical calculations to reconcile amounts using whole numbers and decimals • Arranges/compares numerical information
Navigate the world of work	1.1-1.4, 2.4, 2.5, 3.1-3.3, 4.1, 4.2, 5.1, 5.2, 6.1-6.4	• Appreciates implications of legal and regulatory responsibilities related to own work
Interact with others	1.2, 2.3, 6.3	• Seeks the appropriate form, channel and mode of communication for a specific purpose relevant to own role • Plays an active role in workgroup discussions, paying some attention to the perspective of others
Get the work done	1.2-1.4, 2.1-2.5, 3.1-3.3, 4.1-4.3, 5.1, 5.2, 6.1-6.4	• Plans a range of routine and non-routine tasks recognising stated goals and aiming to achieve them within specified timeframes • Recognises predictable problems and applies formal problem-solving processes or seeks advice from

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		others, as relevant • Automatically implements standard procedures for routine decisions • Uses digital technologies to access, record, store, organise and compile data and present reports as required

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBFIA303 Process accounts payable and receivable	BSBFIA303 Process accounts payable and receivable	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBFIA303 Process accounts payable and receivable

Modification History

Release	Comments
Release 1	This version first released with Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- accurately enter data into journal and subsidiary ledger system
- maintain journals and subsidiary ledger systems
- reconcile subsidiary ledger system with journal or general ledger data
- complete all tasks in accordance with legal and organisational responsibilities, within scope of own responsibility.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list key provisions of relevant legislation and regulations, standards and codes of practice that may affect aspects of financial operations
- briefly describe the organisational accounting systems and procedures
- explain how to check for errors or discrepancies
- list and describe tasks that are outside own scope of responsibility.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the financial administration field of work and include access to:

- office equipment and resources
- computer equipment and relevant software
- examples of cash journals, credit journals, accounts payable and accounts receivable subsidiary legers

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- workplace reference materials such procedural manuals and company policy
- case studies and, where possible, real situations..

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBFIA401 Prepare financial reports

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes skills and knowledge required to record general journal adjustment entries and to prepare end of period financial reports.

It applies to individuals employed in a range of work environments who are responsible for preparing financial reports. They may be individuals providing administrative support within an enterprise, or they might have responsibility for these tasks in relation to their own workgroup or role.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Finance – Financial Administration

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Maintain asset register	1.1 Prepare a register of property, plant and equipment from fixed asset transactions in accordance with legislative and organisational policy and procedures 1.2 Determine method of calculating depreciation in accordance with organisational requirements 1.3 Maintain asset register and associated depreciation schedule in accordance with organisational policy, procedures and accounting

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ELEMENT	PERFORMANCE CRITERIA
	requirements
2 Record general journal entries for balance day adjustments	2.1 Record depreciation of non-current assets and disposal of fixed assets in accordance with organisational policy, procedures and accounting requirements 2.2 Adjust expense accounts and revenue accounts for prepayments and accruals 2.3 Record bad and doubtful debts in accordance with organisational policy, procedures and accounting requirements 2.4 Adjust ledger accounts for inventories, if required, and transfer to final accounts
3 Prepare final general ledger accounts	3.1 Make general journal entries for balance day adjustments in general ledger system in accordance with organisational policy, procedures and accounting requirements 3.2 Post revenue and expense account balances to final general ledger accounts system 3.3 Prepare final general ledger accounts to reflect gross and net profits for reporting period
4 Prepare end of period financial reports	4.1 Prepare revenue statement in accordance with organisational requirements to reflect operating profit for reporting period 4.2 Prepare balance sheet to reflect financial position of business at end of reporting period 4.3 Identify and correct, or refer errors for resolution in accordance with organisational policy and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.1-2.4, 3.1-3.3, 4.1-4.3	• Identifies and interprets information from organisational policies, procedures and job requirements • Checks documents for errors or discrepancies
Writing	1.1, 1.3, 2.1-2.4,	• Records accurate data using relevant format, structure

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	3.1-3.3, 4.1-4.3	and vocabulary
Oral Communication	4.3	• Explains issues clearly using appropriate industry terminology • Asks questions and listens to responses to clarify understanding
Numeracy	1.1-1.3, 2.1-2.4, 3.1-3.3, 4.1-4.2	• Uses a wide range of mathematical calculations to interpret and arrange/compare numerical information
Navigate the world of work	1.1-1.3, 2.3, 2.4, 3.1, 4.1	• Adheres to industry standards, organisational policies and procedures in the conduct of own work
Interact with others	4.3	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role
Get the work done	1.1-1.3, 2.1-2.3, 3.2, 3.3, 4.1-4.3	• Plans and completes tasks according to set guidelines and timelines • Recognises and addresses problems in the context of own work and seeks advice from others, as necessary • Uses digital technologies to access, record, store, organise and compile data as required

Range of Conditions

This section specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Revenue statement comprises:	• cost of goods sold if applicable • gross profit • operating net profit • unclassified adjusted expenses and revenue
Balance sheet comprises:	• narrative or T format • unclassified assets and liabilities

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBFIA401 Prepare	BSBFIA401A	Updated to meet	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
financial reports	Prepare financial reports	Standards for Training Packages	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBFIA401 Prepare financial reports

Modification History

Release	Comments
Release 1	This version first released with Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- produce a detailed asset register and depreciation schedule
- accurately record entries for balance day adjustments
- prepare financial reports
- trace and reconcile errors systematically or seek expert advice if required
- apply double-entry principles
- complete all tasks according to organisational policies and industry standards .

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain double-entry bookkeeping principles
- identify general journal and general ledger entries
- list the key provisions of relevant legislation, regulations, standards and codes of practice that may preparation of financial reports
- describe organisational accounting systems
- outline relevant organisational policies, procedures and accounting standards.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the financial administration field of work and include access to:

- office equipment and resources

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- computer equipment and relevant software
- relevant standards
- samples of financial data
- workplace reference materials such procedural manuals and company policy
- case studies and, where possible, real situations.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBFIM501 Manage budgets and financial plans

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to undertake financial management within a work team in an organisation. It includes planning and implementing financial management approaches, supporting team members whose role involves aspects of financial operations, monitoring and controlling finances and reviewing and evaluating effectiveness of financial management processes.

It applies to managers in a wide range of organisations and sectors who have responsibility for ensuring that work team financial resources are used effectively and are managed in line with financial objectives of the team and organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Finance - Financial Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Plan financial management approaches	1.1 Access budget/financial plans for the work team 1.2 Clarify budget/financial plans with relevant personnel within the organisation to ensure that documented outcomes are achievable, accurate and comprehensible 1.3 Negotiate any changes required to be made to budget/financial

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ELEMENT	PERFORMANCE CRITERIA
	plans with relevant personnel within the organisation 1.4 Prepare contingency plans in the event that initial plans need to be varied
2 Implement financial management approaches	2.1 Disseminate relevant details of the agreed budget/financial plans to team members 2.2 Provide support to ensure that team members can competently perform required roles associated with the management of finances 2.3 Determine and access resources and systems to manage financial management processes within the work team
3 Monitor and control finances	3.1 Implement processes to monitor actual expenditure and to control costs across the work team 3.2 Monitor expenditure and costs on an agreed cyclical basis to identify cost variations and expenditure overruns 3.3 Implement, monitor and modify contingency plans as required to maintain financial objectives 3.4 Report on budget and expenditure in accordance with organisational protocols
4 Review and evaluate financial management processes	4.1 Collect and collate for analysis, data and information on the effectiveness of financial management processes within the work team 4.2 Analyse data and information on the effectiveness of financial management processes within the work team and identify, document and recommend any improvements to existing processes 4.3 Implement and monitor agreed improvements in line with financial objectives of the work team and the organisation

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 2.3, 3.1-3.4, 4.2, 4.3	• Interprets and analyses information to determine activities required

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Writing	1.1, 1.4, 4.1-4.3	• Records information in correct forms and prepares materials which convey detailed and factual content in accordance with internal procedures
Oral Communication	1.2, 1.3, 2.1-2.3	• Presents information about financial issues and requirements to a range of audiences using structure and language to suit the audience • Uses active listening and questioning to clarify information and to confirm understanding
Numeracy	1.1-1.3, 2.1-2.3, 3.1-3.4, 4.1-4.3	• Uses a wide range of mathematical calculations to analyse numeric information in budgets or financial plans
Navigate the world of work	2.2, 3.3, 3.4, 4.3	• Recognises, understands and adheres to organisational requirements in undertaking own work
Interact with others	1.2, 1.3, 2.1, 2.2, 3.1, 2.3, 4.2, 4.3	• Uses a range of strategies to connect, collaborate and cooperate with other work colleagues in activities requiring collective effort and diverse skills and knowledge
Get the work done	1.1, 1.4, 2.3, 3.1-3.4, 4.1-4.3	• Uses logical processes in planning, implementing and evaluating complex tasks and developing alternative strategies in achieving goals and timelines • Uses a range of digital technologies to access, filter, compile, integrate and logically present complex information from multiple sources

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBFIM501 Manage budgets and financial plans	BSBFIM501A Manage budgets and financial plans	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBFIM501 Manage budgets and financial plans

Modification History

Release	Comments
Release 1	This version first released with Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use financial skills to work with and interpret budgets, ageing summaries, cash flow, petty cash, Goods and Services Tax (GST), and profit and loss statements
- communicate with relevant people to clarify budget/financial plans, negotiate changes and disseminate information
- prepare, implement and modify financial contingency plans
- monitor expenditure and control costs
- support and monitor team members
- report on budget and expenditure
- review and make recommendations for improvements to financial processes
- meet record keeping requirements for the Australian Taxation Office (ATO) and for auditing purposes.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe basic accounting principles
- identify and explain the relevant legislation and current requirements of the Australian Taxation Office, including the Goods and Services Tax (GST)
- explain the key requirements for financiall record keeping and auditing
- describe the principles and techniques involved in managing:
  - budgeting
  - cash flows
  - electronic spreadsheets

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- GST
- ledgers and financial statements
- profit and loss statements.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the financial management field of work and include access to:

- resources and documentation used in the workplace
- workplace policies and procedures
- workplace budgets and financial plans
- business technology
- case studies and, where available, real situations.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBFIN401 Report on financial activity

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes skills and knowledge required to prepare financial reports in line with statutory reporting requirements. This includes compiling and analysing financial data.

The unit applies to individuals employed in a range of work environments who are responsible for preparing financial reports. They may be individuals providing administrative support within an organisation, or they might have responsibility for these tasks in relation to their own workgroup or role.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Competence – Financial Literacy

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Compile and analyse financial data	1.1 Prepare a register of assets from fixed asset transactions according to accounting, legislative and organisational requirements 1.2 Calculate depreciation according to legislative and organisational requirements 1.3 Make, record and disclose asset and liability valuations in compliance with accounting standards 1.4 Refer discrepancies, unusual features or queries to appropriate authority where they cannot be resolved 1.5 Identify and record effects of taxation

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ELEMENT	PERFORMANCE CRITERIA
2. Report general journal entries for balance day adjustments	2.1 Record all general ledger accounts and prepare a trial balance 2.2 Adjust expense accounts and revenue accounts for prepayments and accruals 2.3 Make adjustments in general ledger system to close any discrepancies for balance day adjustments according to organisational policies, procedures and accounting requirements 2.4 Review data for errors and compliance with statutory requirements and organisational procedures, and amend as required
3. Prepare end of period financial reports	3.1 Prepare revenue statement for reporting periods according to organisational requirements 3.2 Prepare a balance sheet to reflect financial position of business at end of reporting period 3.3 Prepare and post revenue and expense account to final general ledger accounts to reflect gross and net profits for reporting period 3.4 Correct or refer errors for resolution according to statutory and ethical requirements and organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	• Establishes criteria and categories for financial management purposes and monitors activities on a regular basis • Uses a wide range of mathematical calculations to interpret and arrange numerical information in order to comply with requirements
Reading	• Compares and analyses information from a range of sources varying in complexity to determine and complete financial requirements • Checks documents for errors or discrepancies
Writing	• Records data using relevant format, structure and vocabulary
Planning and organising	• Applies legislation, industry standards and organisational policies and procedures in the conduct of own work • Uses formal and logical processes to plan and complete tasks, achieving timelines and organisational requirements

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Skill	Description
Problem solving	• Addresses problems in the context of own work and seeks advice from others, as necessary • Uses analytical skills to identify discrepancies
Technology	• Uses digital technology to access, filter, compile, integrate and logically present complex information from multiple sources

Unit Mapping Information

No equivalent unit. Supersedes but is not equivalent to:

- BSBFIA401 Prepare financial reports
- BSBFIA412 Report on financial activity
- BSBFIA501 Report on finances related to international business
- BSBINT408 Prepare business advice on the taxes and duties for international trade transactions.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBFIN401 Report on financial activity

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare a financial report on at least two occasions.

In the course of the above, the candidate must:

- produce a detailed asset register and depreciation schedule
- record entries for balance day adjustments
- use conversion and consolidation procedures including moving averages, standardised variables, trend analysis and unit costs
- apply double-entry principles and accrual accounting.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- double-entry and accrual principles
- provisions of relevant legislation, regulations, standards and codes of practice relevant to financial operations, taxable transactions and reporting requirements
- components of organisational accounting systems
- organisational policies, procedures and accounting standards relating to preparation of financial reports
- organisational financial data, including:
  - budget variances
  - budgets and forecasts
  - cash flow and profit reports
  - balance sheets
  - financial year reports
  - operating statements

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  - expenditure and receipts
  - profit and loss statements
  - types of assets including property, plant and equipment
  - comparative financial performance
- financial discrepancies including:
  - absence of auditable trail
  - expenditure report mismatches
  - incorrect payments and unreconciled cash flows
- techniques used for financial forecasting and analysis
- options, methods and practices for deductions, benefits and depreciations
- ethical requirements associated with preparing financial reports for corporate entities, including conflict of interest, confidentiality, and disclosure requirements
- industry-standard methods and formats used to present financial data.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- accounting software
- financial reporting legislation, regulations, standards and codes of practice
- samples of financial data, reports and documents
- workplace reference materials including procedural manuals and company policies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBFRA403 Manage relationship with franchisor

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required by the franchisee to manage the business relationship with the franchisor.

It applies to individuals who need to develop good working relationships with their franchisor within the Franchising Code of Conduct.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Franchising

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Establish relationship with franchisor	1.1 Identify the franchisor's representative/s or liaison person/s 1.2 Identify communication channels with the franchisor's representative/s or liaison person/s 1.3 Establish schedule of contact with the franchisor's representative/s or liaison person/s 1.4 Hold initial meeting with the franchisor's representative/s or liaison person/s to initiate ongoing relationship 1.5 Ensure participation in the franchisee advisory council meetings

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ELEMENT	PERFORMANCE CRITERIA
	and relevant activities
2 Determine services available from franchisor	2.1 Consult with the franchisor's representative/s or liaison person/s to determine range of services available through the franchisor 2.2 Establish schedule for accessing services of the franchisor 2.3 Access services available through the franchisor according to schedule and as needs arise in the course of business operations 2.4 Maintain currency of information relating to services available through the franchisor
3 Implement strategies for meeting franchisee's financial obligations	3.1 Identify franchisee's financial obligations to the franchisor 3.2 Develop and implement strategies and procedures to meet franchisee' financial obligations 3.3 Undertake planning to facilitate ongoing management of franchise
4 Resolve disputes with franchisor	4.1 Identify disputes with the franchisor and enter into negotiations with the franchisor's representative/s or liaison person/s in line with complaints handling procedure as described in the Franchising Code of Conduct 4.2 Seek assistance from third parties or mediators to facilitate resolution of disputes arising with the franchisor and in line with the complaints handling procedure 4.3 Resolve disputes and document courses of agreed action 4.4 Implement agreed courses of action to resolve disputes 4.5 Use lessons learned from disputes to guide future business operations and to facilitate positive relationships with the franchisor

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.2-2.4, 3.1, 3.2, 4.2	• Interprets textual information obtained from a range of sources and determines how content may be applied to individuals and organisational requirements

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Writing	1.3, 2.2, 2.4, 3.2, 4.2, 4.3	• Uses clear, specific and industry-related terminology to complete and update workplace documentation to convey explicit information, requirements and recommendations
Oral Communication	1.3-1.5, 2.1, 2.4, 4.1-4.3, 4.5	• Articulates requirements clearly using language appropriate to audience and environment • Uses active listening and questioning techniques to clarify and confirm understanding
Numeracy	3.1	• Identifies and comprehends relevant mathematical information to manage financial obligations and account for expenditures
Navigate the world of work	2.3, 3.2, 4.1	• Recognises, develops and follows explicit and implicit protocols and meets expectations associated with own role
Interact with others	1.2-1.5, 2.1, 4.1, 4.2	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role • Uses a range of strategies to establish a sense of connection with others • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction
Get the work done	1.1-1.3, 2.2-2.4, 3.1- 3.3, 4.1, 4.3-4.5	• Plans, organises and implements tasks required to achieve required outcomes in accordance with franchise arrangement • Applies formal problem solving skills to address issues, seeking expert assistance if required • Identifies some key principles that may be relevant in future situations

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBFRA403 Manage relationship with franchisor	BSBFRA403B Manage relationship with franchisor	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBFRA403 Manage relationship with franchisor

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- communicate regularly and effectively with the franchisor and/or representatives
- identify and resolve disputes
- conduct financial planning to meet predetermined requirements
- make suggestions for improvements in future work.
- implement processes to manage the relationship between franchisor and self.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain franchise specific obligations as per franchise agreement, specifically financial obligations
- define the roles of others such as mediators/third parties
- explain various problem solving techniques that might be relevant to this specific context.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the management and leadership – franchising field of work. This includes access to:

- business documentation
- feedback from franchisor
- equipment and resources.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBHRM405 Support the recruitment, selection and induction of staff

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to execute tasks associated with the recruitment cycle and apply in-depth knowledge of the work of the organisation, and how recruitment and selection practices fit with other human resources functions.

This unit applies to individuals who support recruitment, selection and induction functions under the direction of a human resource manager.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Workforce Development – Human Resource Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Plan for recruitment	1.1 Obtain approval to fill position, clarify time lines and requirement for appointment 1.2 Assist in preparing job descriptions that accurately reflect the role requirements, according to organisational policies and procedures, legislation, codes, national standards and work health and safety (WHS) considerations 1.3 Consult with relevant personnel about job descriptions and

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ELEMENT	PERFORMANCE CRITERIA
	workforce strategy 1.4 Assist in ensuring that job descriptions comply with legislative requirements and reflect the organisation's requirements for a diverse workforce 1.5 Obtain approvals to advertise position
2 Plan for selection	2.1 Choose appropriate channels and technology to advertise vacancies and/or identify potential talent pool 2.2 Advertise vacancies for staffing requirements according to organisational policies and procedures 2.3 Consult with relevant personnel to convene selection panel and develop interview questions 2.4 Assist in ensuring that interview questions comply with legislative requirements 2.5 Assist in short-listing applicants 2.6 Schedule interviews and advise relevant people of times, dates and venues
3 Support selection process	3.1 Participate in interview process and assess candidates against agreed selection criteria 3.2 Discuss assessment with other selection panel members 3.3 Correct biases and deviations from agreed procedures and negotiate for preferred candidate 3.4 Contact referees for referee reports 3.5 Prepare selection report and make recommendations to senior personnel for appointment 3.6 Advise unsuccessful candidates of outcomes and respond to any queries 3.7 Secure preferred candidate's agreement 3.8 Complete necessary documentation according to organisational procedures, observing confidentiality and privacy requirements
4 Induct successful candidate	4.1 Provide successful candidate with employment contract and other documentation 4.2 Advise manager and work team of new appointment 4.3 Advise managers and staff of candidate's starting date and make necessary administrative arrangements for pay and employee record keeping 4.4 Arrange successful candidate's induction according to

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ELEMENT	PERFORMANCE CRITERIA
	organisational policy

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 1.4, 2.4, 2.5	• Synthesises ideas, concepts and specific information from workplace and regulatory texts to inform development of workplace documents • Evaluates information to make judgements
Writing	1.1, 1.2, 1.5, 2.2, 3.5, 3.6, 3.8, 4.2, 4.3	• Produces a range of text types using specific information, workplace conventions and templates
Oral communication	1.1, 1.3, 1.5, 2.3, 2.5, 3.1-3.5. 3.7	• Asks questions and listens carefully to gather, interpret or evaluate information • Uses appropriate vocabulary to present ideas or persuasive arguments
Navigate the world of work	1.2, 1.4, 2.4, 3.3, 3.8, 4.1, 4.4	• Applies workplace protocols, legislation or regulations relevant to own responsibilities
Interact with others	1.3, 2.3, 3.2, 3.3	• Selects and uses appropriate conventions and protocols when communicating with personnel, candidates or referees • Participates in conversations relevant to role responding, explaining, negotiating and persuading as required
Get the work done	2.1, 2.3, 2.6, 4.1, 4.3, 4.4	• Selects and uses digital technology to access, enter, store and retrieve information in accordance with security requirements • Takes responsibility for planning and implementing tasks for efficient and effective outcomes

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBHRM405 Support the recruitment, selection and induction of staff	BSBHRM405A Support the recruitment, selection and induction of staff	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBHRM405 Support the recruitment, selection and induction of staff

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- prepare job descriptions
- use job descriptions to support sourcing, selecting and appointing suitable staff
- use different advertising channels to promote vacancies and/or establish a potential talent pool
- consult with managers to gain approvals
- develop selection criteria and interview questions in consultation with relevant personnel
- schedule interviews and advise relevant people of times, dates and venues
- participate in interviews and other selection techniques including assessing candidates against selection criteria to short list them
- obtain referees' reports
- prepare and distribute a selection report including feedback to give unsuccessful candidates
- advise unsuccessful candidates of the results
- secure preferred candidate’s agreement and provide an employment contract
- advise other staff of the successful candidate and arrange induction.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify documentation required for recruitment, selection and induction
- explain human resources life cycle and the place of recruitment and selection
- identify legislation relevant to recruitment, selection and induction of staff
- describe channels and technology to advertise vacancies

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- explain a range of interviewing techniques and other selection processes and their application.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the workforce development – human resource development field of work and include access to:

- workplace policies and procedures
- business technology
- position descriptions
- legislation, regulations, Codes and Standards relevant to staff recruitment, selection and induction
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBHRM413 Support the learning and development of teams and individuals

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to determine individual and team development needs and to facilitate the development of the workgroup.

The unit applies to individuals with a broad knowledge of learning and development who apply their skills in addressing development needs to meet team objectives. They may have responsibility to provide guidance or to delegate aspects of tasks to others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical Skills – Human Resources

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Contribute to needs development	1.1 Collect information on performance of team members from relevant sources 1.2 Identify individual and team learning and development needs in line with organisational requirements 1.3 Confirm learning plans meet individual and group training and development needs 1.4 Provide opportunities to individuals to self-evaluate performance and identify areas for improvement
2. Support implementation of	2.1 Develop collaborative learning plans to match skill needs of individuals and groups and match the competency standards

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ELEMENT	PERFORMANCE CRITERIA
learning and development	relevant to the industry 2.2 Ensure learning delivery methods are relevant to the participants 2.3 Identify and coordinate workplace learning opportunities to facilitate individual and team achievement of competencies 2.4 Identify and manage resources and timelines relevant for learning activities according to organisational requirements
3. Monitor and evaluate workplace learning	3.1 Monitor learning plans to improve the efficiency and effectiveness of learning 3.2 Seek feedback from individuals or teams to identify and implement improvements in future learning arrangements 3.3 Assess and record outcomes and performance of individuals and teams to determine the effectiveness of development programs and the extent of additional development support 3.4 Document and maintain records and reports of competency according to organisational requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Uses structured approaches to set goals, monitor progress and adjust learning approaches for self and others • Builds on knowledge and experience to facilitate interaction and learning with others
Reading	• Analyses textual information from a range of sources to identify organisational requirements • Analyses information from a range of sources to evaluate performance
Writing	• Develops materials to suit the requirements of different roles and individuals in the organisation • Maintains records using correct technical and organisational vocabulary
Oral Communication	• Uses vocabulary appropriate to context and to establish a supportive and learning environment • Uses listening and questioning techniques to confirm or show understanding of different perspectives • Selects and uses appropriate conventions and protocols when communicating with co-workers in a range of work contexts

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SKILL	DESCRIPTION
Self-management	• Recognises and responds to explicit and implicit organisational procedures and protocols • Understands how own role meshes with others and contributes to broader goals
Teamwork	• Recognises the importance of building rapport to establish effective working relationships • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction • Negotiates with others to achieve agreeable outcomes playing an active role in facilitating consensus in potentially contentious situations
Problem solving	• Uses logical planning processes to organise, implement and monitor learning and development needs • Systematically gathers and analyses all relevant information and evaluates options to make informed decisions • Evaluates outcomes of decisions to identify opportunities for improvement

Unit Mapping Information

Supersedes and is equivalent to BSBLED401 Develop teams and individuals.

Supersedes but is not equivalent to:

- BSBFLM311 Support a workplace learning environment
- BSBLED301 Undertake e-learning.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBHRM413 Support the learning and development of teams and individuals

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- contribute to, facilitate and monitor learning and development for at least one team and for at least one individual.

In the course of the above, the candidate must:

- collect data on team and individual and team development needs
- collaboratively develop learning plans to match skill needs of individuals and groups
- coordinate learning opportunities
- give and receive feedback during the implementation of learning plans
- monitor and review workplace learning plan implementation plans.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- facilitation techniques to support team development and improvement
- organisational policies, plans and procedures for developing teams
- career paths and competency standards relevant to the industry
- key sources of information relevant to inform development needs
- key features of learning and development methods.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- learning and development plans, policies and procedures.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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BSBHRM505 Manage remuneration and employee benefits

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.1. Version created to correct mapping table information
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to implement an organisation's remuneration and benefit plans. It incorporates all functions associated with remuneration, including packaging, salary benchmarking, market rate reviews, bonuses and the legislative aspects of remuneration and employee benefits.

It applies to individuals who are human resource managers responsible for overseeing an organisation's remuneration process.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Workforce Development – Human Resource Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Develop organisation's remuneration strategy	1.1 Analyse strategic and operational plans to determine the scope of remuneration and benefits plans 1.2 Undertake research on current practice, recent developments

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ELEMENT	PERFORMANCE CRITERIA
	and legislative parameters for remuneration strategy 1.3 Develop options for consideration by relevant managers 1.4 Present options showing the link to organisational strategic objectives 1.5 Ensure remuneration policies and incentive plans are agreed and recorded 1.6 Ensure organisation is positioned as an employer of choice and regarded as a desirable workplace
2 Implement remuneration strategy	2.1 Research occupational groups to determine those which are industrial agreement based 2.2 Access or undertake market rates surveys regularly to ensure the organisation's required level of competitiveness for particular occupational groups is maintained 2.3 Align remuneration and benefits plans with performance management system 2.4 Ensure employees receive at least their minimum entitlements according to organisational policies and legal requirements 2.5 Ensure salary packages comply with organisational policies and legal requirements, including fringe benefits tax (FBT) and superannuation 2.6 Ensure incentive arrangements, if included, comply with the organisation's remuneration strategy
3 Review and update remuneration strategy	3.1 Consult managers and employees about the effectiveness of the remuneration strategy 3.2 Amend strategy and plans as necessary to meet organisational policies and legal requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.4, 2.1-2.3, 2.5, 2.6, 3.2	• Evaluates and integrates facts and ideas to construct meaning from a range of text types

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Writing	1.2, 1.3, 1.5, 2.2, 2.3. 3.2	• Develops complex material for specific audiences using clear language and appropriate structure to convey explicit information, requirements and recommendations
Oral Communication	1.4, 1.5, 3.1	• Draws on a repertoire of open questioning and active listening skills when consulting others • Uses appropriate terminology and non-verbal features to present information or clarify understanding
Numeracy	1.1, 2.3, 2.4, 2.6,	• Analyses numerical information to determine employee remuneration and benefits according to a clear set of parameters
Navigate the world of work	1.2, 1.4, 1.6, 2.3-2.6, 3.2	• Adheres to relevant organisational policies, procedures and legislative requirements • Considers own role in terms of its contributions to broader goals of the work environment
Interact with others	1.4, 1.5, 3.1	• Uses effective presentation and collaboration skills to show options, negotiate agreement and gain feedback on policies
Get the work done	1.1, 1.3, 2.2, 2.3, 3.2	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, taking into account capabilities, efficiencies and effectiveness • Applies systematic and analytical processes to determine appropriate models of remuneration and benefits for particular occupational groups and individuals • Uses evaluation and analysis of feedback to decide on improvements to strategy

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBHRM505 Manage remuneration and employee benefits	BSBHRM505B Manage remuneration and employee benefits	Updated to meet Standards for Training Packages	Equivalent unit

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Links

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Assessment Requirements for BSBHRM505 Manage remuneration and employee benefits

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.1. Version created to correct mapping table information
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- develop remuneration strategies for different occupational groups
- manage remuneration and benefits in accordance with all legislative and ethical requirements and operational policies
- apply awards and agreements to remuneration processes
- apply requirements of the Australian Taxation Office in relation to income tax, superannuation reporting, FBT and bonus payments.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline remuneration principles or models and approaches
- explain the ethical practices relating to remuneration and benefits strategies
- outline various remuneration or employee benefits
- describe ways to position an organisation an 'employer of choice'
- outline award structures for industrial agreements
- summarise organisational policies and procedures affecting remuneration strategies
- identify relevant legislation, regulations and standards that may affect remuneration strategies
- list the requirements of the Australian Taxation Office in relation to:

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- income tax
- superannuation reporting
- FBT and bonus payments.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the workforce development – human resource development field of work and include access to:

- an appropriate range of documentation and resources normally used in the workplace
- organisational policies and procedures
- relevant legislation, regulations and codes of practice
- business technology.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBINM202 Handle mail

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to receive and distribute incoming mail, and to collect and despatch outgoing mail.

It applies to individuals who perform a range of routine tasks in the workplace, using a limited range of practical skills and knowledge of mail handling under direct supervision or with limited individual responsibility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Knowledge Management – Information Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Receive and distribute incoming mail	1.1 Ensure incoming mail is checked and registered in accordance with organisational policies and procedures 1.2 Identify titles and locations of company personnel and departments 1.3 Identify and distribute urgent and confidential mail in accordance with organisational requirements 1.4 Sort and deliver mail to nominated person/location in

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ELEMENT	PERFORMANCE CRITERIA
	accordance with organisational requirements 1.5 Record and/or report damaged, suspicious or missing items and take appropriate action in accordance with organisational policies and procedures
2 Collect and despatch outgoing mail	2.1 Collect, check and sort outgoing mail to ensure all items are correctly prepared for despatch in accordance with organisational policies and procedures 2.2 Record and process outgoing mail for despatch in accordance with organisational requirements 2.3 Despatch mail to meet designated timelines
3 Organise urgent and same day deliveries	3.1 Evaluate delivery options and select best option 3.2 Prepare items for urgent delivery in accordance with organisational requirements and carrier specifications 3.3 Organise lodgement or pick-up of emergency deliveries and follow up if necessary

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.5, 2.1, 2.2, 3.2, 3.3	• Recognises and interprets textual information to complete tasks according to organisational requirements
Writing	1.5, 2.2, 3.2, 3.3	• Records simple and routine information using an established format and workplace-specific vocabulary
Oral Communication	1.4, 1.5, 3.3	• Uses questions to clarify and confirm instructions, listens to directions and clearly articulates requirements
Numeracy	1.5, 2.1-2.3, 3.2, 3.3	• Recognises basic mathematical data to verify weight, addresses and registered numbers • Performs basic calculations needed to estimate time for a variety of mail despatches
Navigate the world of work	1.1, 1.3-1.5, 2.1, 2.2, 3.2	• Recognises organisational expectations and follows explicit protocols, policies and procedures

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Interact with others	1.4, 1.5	• Identifies and responds effectively to information associated with job role using appropriate language • Follows accepted communication practices and protocols in performance of tasks
Get the work done	1.2-1.5, 2.1-2.3, 3.1-3.3	• Follows clear instructions within defined level of responsibility • Makes low-impact decisions around clearly defined tasks • Responds to predictable routine problems and implements standard procedures or logical solutions • Uses organisational systems to enter and retrieve data

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBINM202 Handle mail	BSBINM202A Handle mail	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBINM202 Handle mail

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- work with a variety of incoming and outgoing mail
- engage mail carriers' to organisational requirements
- apply relevant legislation to handling mail.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the Australian postal codes system
- explain key provisions of relevant legislation, regulations, standards and codes of practice that may affect mail handling
- describe organisational policies and procedures specific to handling electronic mail procedural requirements for receiving/despatching and prioritising correspondence
- list the range of mail services available.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the knowledge management – information management field of work and include access to:

- office equipment and resources
- examples of correspondence and parcels for sorting and despatch.

Assessors must satisfy NVR/AQTF assessor requirement

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBINN502 Build and sustain an innovative work environment

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to create an environment that enables and supports the application of innovative practice focusing on a holistic approach to the integration of innovation across all areas of work practice.

It applies to individuals working in leadership or management roles in any industry or community context. The individual could be employed by the organisation, but may also be an external contractor, the leader of a cross organisation team or of a self-formed team of individuals. The work group could be permanent or temporary in nature.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Creativity and Innovation – Innovation

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Lead innovation by example	1.1 Make innovation an integral part of leadership and management activities 1.2 Demonstrate positive reception of ideas from others and provide constructive advice 1.3 Establish and maintain relationships based on mutual respect and trust

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Take considered risks to open up opportunities for innovation 1.5 Regularly evaluate own approaches for consistency with the wider organisational or project context
2 Establish work practices that support innovation	2.1 Consult on and establish working conditions that reflect and encourage innovative practice 2.2 Introduce and maintain workplace procedures that foster innovation and allow for rigorous evaluation of innovative ideas 2.3 Facilitate and participate in collaborative work arrangements to foster innovation 2.4 Build and lead teams to work in ways that maximise opportunities for innovation
3 Promote innovation	3.1 Acknowledge suggestions, improvements and innovations from all colleagues 3.2 Find appropriate ways of celebrating and promoting innovation 3.3 Promote and reinforce the value of innovation according to the vision and objectives of the organisation or project 3.4 Promote and support the evaluation of innovative ideas within the wider organisational or project context
4 Create a physical environment which supports innovation	4.1 Evaluate the impact of the physical environment in relation to innovation 4.2 Collaborate with colleagues about ideas for enhancing the physical work environment before taking action 4.3 Consider potential for supporting innovation when selecting physical resources and equipment 4.4 Design, fit-out and decorate workspaces to encourage creative mindsets, collaborative working and the development of positive workplace relationships
5 Provide learning opportunities	5.1 Pro-actively share relevant information, knowledge and skills with colleagues 5.2 Provide or encourage formal and informal learning opportunities to help develop the skills needed for innovation 5.3 Create opportunities in which individuals can learn from the experience of others

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.5, 2.2, 4.1, 5.1	• Interprets and evaluates information that may deal with complex ideas related to issues both within and outside a given workplace context
Writing	3.3, 3.4, 5.1	• Develops information for others using language to suit the context and audience
Oral Communication	1.2, 2.1, 2.3, 3.1, 3.3, 3.4, 5.1	• Presents ideas and concepts to a range of audiences using structure and language to suit the audience • Uses active listening and questioning to discuss and clarify information and to confirm understanding
Navigate the world of work	1.1, 1.5, 2.1, 2.2, 3.3, 5.1, 5.2	• Takes responsibility for implementing practices and procedures to achieve organisational objectives in innovation according to role requirements • Stays up to date with professional development options to provide relevant information to staff
Interact with others	1.2, 1.3, 2.3, 2.4, 3.1-3.4, 4.2, 5.1, 5.3	• Uses appropriate communication techniques to build rapport and foster strong relationships with co-workers in a range of work contexts • Uses inclusive and collaborative techniques to share, promote and convey complex information about new ideas and systems within the workplace
Get the work done	1.1, 1.4, 1.5, 2.1, 3.2, 3.3, 4.1, 4.3, 4.4, 5.2, 5.3	• Accepts responsibility for planning and implementing tasks and practices to achieve organisational goals, negotiating key aspects with others and taking into account current capabilities and needs • Develops new and innovative ideas through exploration, evaluation, analysis and critical thinking • Facilitates a climate where people feel comfortable suggesting and discussing improvements or new ideas • Uses problem solving processes to identify, assess and respond to challenges and risks around innovation

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

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Code and title current version	Code and title previous version	Comments	Equivalence status
BSBINN502 Build and sustain an innovative work environment	BSBINN502A Build and sustain an innovative work environment	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBINN502 Build and sustain an innovative work environment

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to maximise opportunities for innovation by:

- establishing procedures and practices that foster innovation including:
  - collaborative work arrangements
  - building team capacity to contribute to innovation
  - providing formal and informal learning opportunities
  - evaluating ideas
  - celebration and promotion of innovation
  - consultation
  - respectful communications and sharing of ideas and feedback
- reinforcing the value of innovation to the vision and objectives of the organisation,
- model ling behaviour including being receptive to ideas, giving constructive advice, evaluating own work, establishing and maintaining relationships based on mutual respect and trust, taking considered risks that provide opportunities for innovation
- evaluating how the physical environment can be enhanced to support innovation and collaboration and collaborating on ideas to make improvements including in the selection of physical resources and equipment, and the design, fit-out and decoration of the workspaces
- making changes to a workspace that will encourage innovation in at least one of
  - design
  - fit-out
  - decoration.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

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Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the concepts and theories of innovation and how these link to innovation in practice
- explain the context for innovation in the workplace including core business values, overall objectives, broader environmental context and the need to ensure the value and benefit of innovative ideas and projects
- discuss the factors and tools that can motivate individuals to use creative thinking and apply innovative work practices
- research the legislative framework that impacts on operations in the relevant workplace context
- explain how different approaches to management and leadership can support or hinder innovation
- discuss typical challenges and barriers to innovation within teams and organisations and ways of overcoming these including rewarding and celebrating innovation, coaching and learning, modelling behaviour and managing the physical environment.
-

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the creativity and innovation and include access to:

- workplace documents
- case studies and, where possible, real situations
- office equipment and resources
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBINS309 Maintain business records

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to maintain the records of a business on an operational basis.

The unit applies to individuals who follow established guidelines and processes to carry out their work. They work under supervision or in consultation with senior staff or system users to support effective information management and governance practices across the organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical Skills – Information Services

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Collate business records	1.1 Identify relevant information and records according to organisational policies and procedures 1.2 Organise records in accordance with organisational policies and procedures 1.3 Follow relevant security and access requirements in accordance with organisational policies and procedures
2. Update business or records system	2.1 Record and update information and record description of new records in business or records system according to organisational policies and procedures 2.2 Identify and dispose of relevant records of redundant business

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ELEMENT	PERFORMANCE CRITERIA
	activities from current system according to organisational policies and procedures
3. Prepare and distribute reports from the business or records system	3.1 Interpret requests for reports 3.2 Prepare reports from business or records system according to request and organisational security and access procedures 3.3 Distribute reports to relevant stakeholders according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Gathers and interprets textual information from different sources to determine how information and records may be applied
Writing	• Uses clear and industry related terminology to document, complete and update workplace information and records
Numeracy	• Recognises and uses numerical systems associated with business or record systems
Self-management	• Takes responsibility for planning and organising own workload to ensure work deadlines are met • Takes responsibility for the outcomes of routine decisions related directly to own role
Technology	• Uses main features and functions of digital tools to maintain business records

Unit Mapping Information

Supersedes and is equivalent to BSBRKG304 Maintain business records.

Supersedes but is not equivalent to BSBRKG305 Review recordkeeping functions.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBINS309 Maintain business records

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, organise, update, and distribute four business records in compliance with organisational policies and procedures on at least three separate occasions.

In the course of the above, the candidate must:

- record and update information in an information management system
- describe records.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational policies and procedures regarding the maintenance and security of business records
- organisational requirements of business or records system reports
- key aspects and processes of records management and records management systems.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace documentation and resources relevant to business records.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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Links

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BSBITS401 Maintain business technology

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.1. Version created to correct mapping table information
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to maintain the effectiveness of business technology in the workplace. It includes maintaining existing technology and planning for future technology requirements.

It applies to individuals with a broad knowledge of business technology who may be required to contribute well-developed skills in creating solutions to maintenance and upgrade issues with existing technology. They may have responsibility to provide guidance or to delegate aspects of these tasks to others.

No licensing, legislation or certification requirements apply to this unit at the time of publication.

Unit Sector

Information and Communications Technology – IT Support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Maintain performance of hardware and software	1.1 Monitor and evaluate system effectiveness to ensure it meets organisational and system requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.2 Use operating system, drive and disk structure, reports and files to identify performance problems 1.3 Maintain disk drives and peripherals according to manufacturers' and organisational requirements 1.4 Replace consumables in accordance with manufacturers' and organisational requirements
2. Provide basic system administration	2.1 Carry out system back-up procedure at regular intervals according to organisational and system requirements 2.2 Install and operate software applications in accordance with developers' and organisational requirements 2.3 Maintain and update security access procedures in line with organisational requirements 2.4 Ensure that licences for use of software are used, checked and recorded in accordance with organisational requirements 2.5 Regularly maintain and update virus programs in accordance with organisational requirements
3. Identify future technology requirements	3.1 Maintain knowledge of current and new technology by regularly accessing sources of information 3.2 Identify and develop improved technology systems using feedback from clients and colleagues 3.3 Assess existing technology against newly available technology to determine future needs and priorities 3.4 Identify and select new technologies to achieve and maintain continuous organisational development 3.5 Obtain management and budget approval for new selected technologies

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.4, 2.1-2.5, 3.1-3.4	• Gathers, analyses and interprets a range of textual information from a variety of sources and identifies

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		relevant information
Writing	2.3, 2.4, 3.5	• Produces texts of varying complexity using appropriate language and logical structure to record and convey information
Navigate the world of work	1.1, 1.3, 1.4, 2.1-2.5	• Complies with organisational policies and legal responsibilities related to own work
Get the work done	1.1-1.4, 2.1-2.5, 3.1-3.5	• Plans, implements and monitors tasks required to achieve required outcomes • Takes responsibility for the outcomes of routine decisions directly related to own role • Recognises and takes responsibility for addressing predictable and some less predictable problems in familiar work contexts • Understands the purposes, specific functions and key features of common digital systems and tools and operates them effectively to complete routine tasks • Identifies innovations by monitoring trends from other contexts

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBITS401 Maintain business technology	BSBITS401B Maintain business technology	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBITS401 Maintain business technology

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.1. Version created to correct mapping table information
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- install software and hardware and maintain performance according to manufacturers' and organisational requirements
- organise and access software, materials and consumables
- maintain and update technology and security systems.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the costs and benefits of technology maintenance
- describe the general features and capabilities of current industry-accepted hardware and software products
- explain the importance of:
  - back-up and security procedures
  - maintenance and diagnostic procedures
  - licensing, installation and purchasing procedures.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the information and communications technology – IT support field of work and include access to:

- case studies and, where possible, real situations
- office equipment and resources
- examples of technology maintenance and security procedures.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBLDR402 Lead effective workplace relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit defines skills, knowledge and outcomes required to use leadership to promote team cohesion. It includes motivating, mentoring, coaching and developing the team and forming the bridge between the management of the organisation and team members.

This unit applies to team leaders, supervisors and new or emerging managers where leadership plays a role in developing and maintaining effective workplace relationships. It applies in any industry or community context.

At this level work will normally be carried out within routine and non-routine methods and procedures, which require planning and evaluation and leadership and guidance of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership - Leadership

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Collect, analyse and communicate information and ideas	1.1 Collect relevant information from appropriate sources and analyse and share with the work team to improve work performance 1.2 Communicate ideas and information in a manner which is appropriate and sensitive to the cultural and social diversity of the

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ELEMENT	PERFORMANCE CRITERIA
	audience and any specific needs 1.3 Lead consultation processes to encourage employees to contribute to issues related to their work, and promptly relay feedback to the work team in regard to outcomes 1.4 Seek and value contributions from internal and external sources in developing and refining new ideas and approaches 1.5 Implement processes to ensure that issues raised are resolved promptly or referred to relevant personnel as required
2. Develop trust and confidence as leader	2.1 Treat all internal and external contacts with integrity, respect and empathy 2.2 Use the organisation's social, ethical and business standards to develop and maintain effective relationships 2.3 Gain and maintain the trust and confidence of colleagues, customers and suppliers through competent performance 2.4 Adjust interpersonal styles and methods to meet organisation's social and cultural environment 2.5 Lead and encourage other members of the work team to follow examples set according to organisation's policies and procedures
3. Develop and maintain networks and relationships	3.1 Use networks to identify and build relationships 3.2 Use networks and other work relationships to provide identifiable benefits for the team and organisation
4. Manage difficulties into positive outcomes	4.1 Identify and analyse difficulties and take action to rectify the situation within the requirements of the organisation and relevant legislation 4.2 Guide and support colleagues to resolve work difficulties 4.3 Regularly review and improve workplace outcomes in consultation with relevant personnel 4.4 Manage poor work performance within the organisation's processes 4.5 Manage conflict constructively within the organisation's processes

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.1	• Collects, analyses and evaluates textual information from a range of resources to inform improvement strategies
Oral Communication	1.2, 1.3, 2.4, 2.5, 4.2	• Selects or adjusts communication style to maintain effectiveness of interaction and build and maintain engagement consistent with organisational requirements
Navigate the world of work	2.2, 2.5, 4.1, 4.4, 4.5	• Recognises and follows legislative and organisational requirements relevant to own role
Interact with others	1.1-1.4, 2.1, 2.3, 2.5, 3.1, 3.2, 4.2, 4.5	• Selects and uses appropriate conventions and protocols when communicating with diverse stakeholders • Adapts personal communication style to build trust and positive working relationships and to show respect for the opinions, values and particular needs of others • Plays a lead role in situations requiring effective collaboration, demonstrating conflict resolution skills and ability to engage and motivate others
Get the work done	1.1, 1.5, 4.1, 4.3	• Plans and implements activities and processes to manage and review work performance • Systematically gathers and analyses all relevant information to formulate and evaluate possible solutions to difficulties

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBLDR402 Lead effective workplace relationships	BSBWOR401A Establish effective workplace relationships	Updated to meet Standards for Training Packages Title change Minor edits to clarify intent of performance criteria	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBLDR402 Lead effective workplace relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- access and analyse information to achieve planned outcomes
- apply techniques for resolving problems and conflicts and dealing with poor performance within organisational and legislative requirements
- review and improve workplace outcomes in consultation with relevant personnel
- adjust interpersonal style and communications to respond to cultural and social diversity
- apply relationship management and communication skills with a range of people that:
  - demonstrate integrity, respect, empathy and cultural sensitivity and promote trust
  - forge effective relationships with internal and/or external people and help to maintain these networks
  - encourage participation and foster contribution of and respect for ideas and feedback
  - provide support to colleagues to resolve difficulties.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- give examples of how work relationships, and the cultural and social environment, can support or hinder achieving planned outcomes
- explain techniques for developing positive work relationships and building trust and confidence in a team including interpersonal styles, communications, consultation, cultural and social sensitivity, networking
- explain the impact of legislation and organisational policies on workplace relationships
- describe a range of methods and techniques for communicating information and ideas to a range of stakeholders
- outline problems solving methods

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- explain methods to resolve workplace conflict
- explain methods to manage poor work performance
- explain how to monitor, analyse and introduce ways to improve work relationships.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the management and leadership field of work and include access to:

- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBLDR413 Lead effective workplace relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills, knowledge and outcomes required to use leadership to promote team cohesion. It includes motivating, mentoring, coaching and developing the team and forming the bridge between the management of the organisation and team members.

The unit applies to team leaders, supervisors and new or emerging managers where leadership plays a role in developing and maintaining effective workplace relationships. It applies in any industry or community context. At this level work will normally be carried out within routine and non-routine methods and procedures, which require planning, evaluation, leadership and guidance of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Social Competence – Leadership

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to lead workplace relationships	1.1 Identify work team objectives according to organisational strategy 1.2 Collect and analyse information for the achievement of work task 1.3 Share ideas and information with relevant internal and external stakeholders according to work task 1.4 Develop strategy for completion of work task in collaboration with work team

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ELEMENT	PERFORMANCE CRITERIA
2. Lead workplace relationships	2.1 Identify and implement methods to facilitate collaboration to complete work task 2.2 Support colleagues experiencing difficulties fulfilling work requirements 2.3 Manage conflict constructively within the organisation's processes and parameters of own role 2.4 Communicate work progress to relevant internal and external stakeholders
3. Review leadership	3.1 Seek feedback on relationship management for work task from relevant stakeholders 3.2 Analyse feedback on relationship management 3.3 Evaluate personal performance in leading workplace relationships 3.4 Identify areas of improvement for leading workplace relationships future work tasks

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Collects, analyses and evaluates textual information from a range of resources to inform improvement strategies
Oral Communication	• Selects or adjusts communication style to maintain effectiveness of interaction and build and maintain engagement consistent with organisational requirements
Initiative and enterprise	• Identifies and follows legislative and organisational requirements relevant to own role
Teamwork	• Selects and uses appropriate conventions and protocols when communicating with diverse stakeholders • Adapts personal communication style to build trust and positive working relationships and to show respect for the opinions, values and particular needs of others • Plays a lead role in situations requiring effective collaboration, demonstrating conflict resolution skills and ability to engage and motivate others
Planning and	• Plans and implements activities and processes to manage and review work performance

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organising	• Systematically gathers and analyses all relevant information to formulate and evaluate possible solutions to difficulties

Unit Mapping Information

Supersedes and is equivalent to BSBLDR402 Lead effective workplace relationships.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBLDR413 Lead effective workplace relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- lead effective workplace relationships on at least four occasions with different individuals or groups.

In the course of the above, the candidate must:

- access and analyse information required to achieve planned outcomes
- collaborate with work team to develop and implement a work task strategy
- apply techniques for resolving problems and conflicts, and dealing with poor performance according to organisational and legislative requirements
- monitor and communicate work progress to relevant internal and external stakeholders
- seek and review feedback to improve workplace leadership.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- considerations for communicating information including audience cultural and social diversity
- consultation processes including internal and external sources of consultees
- impacts of relationships, cultural and social environment, in supporting or hindering the achievement of planned outcomes
- techniques for developing positive work relationships and building trust and confidence in a team, including:
  - interpersonal styles
  - communications
  - consultation
  - cultural and social sensitivity
  - networking

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- impact of legislation and organisational policies on workplace relationships
- techniques for communicating information and ideas to a range of stakeholders
- common methods to resolve workplace conflict
- common methods to manage poor work performance
- common methods to monitor, analyse and improve work relationships.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- legislation, regulations, standards and codes relevant to performance evidence
- workplace documentation and resources
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBLED401 Develop teams and individuals

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify assessment requirements
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to determine individual and team development needs and to facilitate the development of the workgroup.

It applies to individuals with a broad knowledge of learning and development who apply their skills in addressing development needs to meet team objectives. They may have responsibility to provide guidance or to delegate aspects of tasks to others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Workforce Development – Learning and Development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine development needs	1.1 Systematically identify and implement learning and development needs in line with organisational requirements 1.2 Ensure that a learning plan to meet individual and group training and development needs is collaboratively developed, agreed to and

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ELEMENT	PERFORMANCE CRITERIA
	implemented 1.3 Encourage individuals to self-evaluate performance and identify areas for improvement 1.4 Collect feedback on performance of team members from relevant sources and compare with established team learning needs
2. Develop individuals and teams	2.1 Identify learning and development program goals and objectives, ensuring a match to the specific knowledge and skill requirements of competency standards relevant to the industry 2.2 Ensure that learning delivery methods are appropriate to the learning goals, the learning style of participants, and availability of equipment and resources 2.3 Provide workplace learning opportunities, and coaching and mentoring assistance to facilitate individual and team achievement of competencies 2.4 Create development opportunities that incorporate a range of activities and support materials appropriate to the achievement of identified competencies 2.5 Identify and approve resources and time lines required for learning activities in accordance with organisational requirements
3. Monitor and evaluate workplace learning	3.1 Use feedback from individuals or teams to identify and implement improvements in future learning arrangements 3.2 Assess and record outcomes and performance of individuals/teams to determine the effectiveness of development programs and the extent of additional development support 3.3 Negotiate modifications to learning plans to improve the efficiency and effectiveness of learning 3.4 Document and maintain records and reports of competency according to organisational requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Learning	1.1-1.4, 2.1-2.4, 3.1, 3.3	• Uses structured approaches to set goals, monitor progress and adjust learning approaches for self and others • Builds on knowledge and experience to facilitate interaction and learning with others
Reading	1.1, 1.2, 1.4, 2.1, 2.2, 2.4, 2.5, 3.1-3.4	• Analyses textual information from a range of sources to identify organisational requirements • Analyses information from a range of sources to evaluate performance
Writing	1.1, 1.2, 1.4, 2.1, 2.5, 3.1-3.4	• Develops materials to suit the requirements of different roles and individuals in the organisation • Maintains records using correct technical and organisational vocabulary
Oral Communication	1.2, 1.3, 1.4, 2.3, 3.1, 3.3	• Uses vocabulary appropriate to context and to establish a supportive and learning environment • Uses listening and questioning techniques to confirm or show understanding of different perspectives
Navigate the world of work	1.1, 2.5, 3.4	• Recognises and responds to explicit and implicit organisational procedures and protocols Understands how own role meshes with others and contributes to broader goals
Interact with others	1.2, 1.3, 1.4, 2.2, 2.3, 3.1, 3.3	• Selects and uses appropriate conventions and protocols when communicating with co-workers in a range of work contexts • Recognises the importance of building rapport to establish effective working relationships • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction • Negotiates with others to achieve joint/agreeable outcomes playing an active role in facilitating consensus in potentially contentious situations
Get the work done	1.1, 1.2, 1.4, 2.1, 2.2, 2.3, 2.5, 3.1, 3.2, 3.4	• Uses logical planning processes to organise, implement and monitor learning and development needs • Systematically gathers and analyses all relevant information and evaluates options to make informed decisions • Evaluates outcomes of decisions to identify opportunities for improvement

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBLED401 Develop teams and individuals Release 2	BSBLED401 Develop teams and individuals Release 1	Updated to clarify assessment requirements	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBLED401 Develop teams and individuals

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify assessment requirements
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- systematically identify and implement learning opportunities for others
- collect feedback on team and individual performance
- give and receive feedback from team members to encourage participation in and effectiveness of the team
- collaboratively develop learning plans to match skill needs of individuals and groups
- provide mentoring and coaching assistance to teams and individuals
- monitor and review workplace learning.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe facilitation techniques to encourage team development and improvement
- outline organisational policies, plans and procedures for developing teams
- identify career paths and competency standards relevant to the industry.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the workforce learning and development field of work and include access to:

- office equipment and resources
- learning and development plans, policies and procedures
- case studies and, where available, real situations
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBMGT502 Manage people performance

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to manage the performance of staff who report to them directly. Development of key result areas and key performance indicators and standards, coupled with regular and timely coaching and feedback, provide the basis for performance management.

It applies to individuals who manage people. It covers work allocation and the methods to review performance, reward excellence and provide feedback where there is a need for improvement.

The unit makes the link between performance management and performance development, and reinforces both functions as a key requirement for effective managers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Allocate work	1.1 Consult relevant groups and individuals on work to be allocated and resources available

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ELEMENT	PERFORMANCE CRITERIA
	1.2 Develop work plans in accordance with operational plans 1.3 Allocate work in a way that is efficient, cost effective and outcome focussed 1.4 Confirm performance standards, Code of Conduct and work outputs with relevant teams and individuals 1.5 Develop and agree performance indicators with relevant staff prior to commencement of work 1.6 Conduct risk analysis in accordance with the organisational risk management plan and legal requirements
2. Assess performance	2.1 Design performance management and review processes to ensure consistency with organisational objectives and policies 2.2 Train participants in the performance management and review process 2.3 Conduct performance management in accordance with organisational protocols and time lines 2.4 Monitor and evaluate performance on a continuous basis
3. Provide feedback	3.1 Provide informal feedback to staff on a regular basis 3.2 Advise relevant people where there is poor performance and take necessary actions 3.3 Provide on-the-job coaching when necessary to improve performance and to confirm excellence in performance 3.4 Document performance in accordance with the organisational performance management system 3.5 Conduct formal structured feedback sessions as necessary and in accordance with organisational policy
4. Manage follow up	4.1 Write and agree on performance improvement and development plans in accordance with organisational policies 4.2 Seek assistance from human resources specialists, where appropriate 4.3 Reinforce excellence in performance through recognition and continuous feedback 4.4 Monitor and coach individuals with poor performance 4.5 Provide support services where necessary 4.6 Counsel individuals who continue to perform below expectations and implement the disciplinary process if necessary 4.7 Terminate staff in accordance with legal and organisational

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ELEMENT	PERFORMANCE CRITERIA
	requirements where serious misconduct occurs or ongoing poor-performance continues

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	2.2, 3.3, 4.4	• Consolidates and improves own knowledge and skills by coaching, mentoring or training others
Reading	1.2, 1.6, 2.4	• Gathers, interprets and analyses texts in organisational documents to facilitate performance management
Writing	1.2, 1.4, 1.5, 1.6, 2.1, 2.3, 2.4, 3.4, 3.5, 4.1, 4.7	• Plans and prepares documents for allocating work and managing performance suitable for the target audience and in accordance with organisational requirements
Oral Communication	1.1, 1.4, 1.5, 2.2, 2.3, 3.1, 3.2, 3.3, 3.5, 4.2-4.7	• Uses language and structure appropriate to context and audience to explain expected standards of performance, provide feedback and coach staff
Numeracy	1.3, 1.4, 1.5, 1.6, 2.1, 2.4, 3.4, 4.1	• Extracts and evaluates mathematical information embedded in a range of tasks and text relating to performance standards and risk analysis
Navigate the world of work	1.2, 1.6, 2.1, 2.3, 3.4, 3.5, 4.1, 4.7	• Appreciates the implications of legal and regulatory responsibilities related to own work and the organisation as a whole • Monitors adherence to organisational policies and procedures
Interact with others	1.1, 1.3, 1.4, 1.5, 2.2, 3.1, 3.2, 3.3, 4.2-4.6	• Recognises and applies the protocols governing what to communicate to whom and how in a range of work contexts • Collaborates with others to achieve joint outcomes, influencing direction and taking a leadership role on occasion
Get the work done	1.2, 1.3, 1.5, 1.6, 2.1, 2.4, 4.1, 4.2	• Sequences and schedules complex activities, monitors implementation and manages relevant communication • Seeks advice, feedback and support as required to assist in the decision-making process • Uses experiences to reflect on the ways in which

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		variables impact on performance

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBMGT502 Manage people performance	BSBMGT502B Manage people performance	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBMGT502 Manage people performance

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- consult with relevant stakeholders to identify work requirements, performance standards and agreed performance indicators
- develop work plans and allocate work to achieve outcomes efficiently and within organisational and legal requirements
- monitor, evaluate and provide feedback on performance and provide coaching or training, as needed
- reinforce excellence in performance through recognition and continuous feedback
- seek assistance from human resources specialists where appropriate
- keep records and documentation in accordance with the organisational performance management system.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline relevant legislative and regulatory requirements
- outline relevant awards and certified agreements
- explain performance measurement systems utilised within the organisation
- explain unlawful dismissal rules and due process
- describe staff development options and information.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the management and leadership field of work and include access to:

- relevant legislation
- workplace documentation and resources
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBMGT517 Manage operational plan

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to develop and monitor implementation of the operational plan to provide efficient and effective workplace practices within the organisation's productivity and profitability plans.

Management at a strategic level requires systems and procedures to be developed and implemented to facilitate the organisation's operational plan.

This unit applies to individuals who manage the work of others and operate within the parameters of a broader strategic and/or business plan.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop operational plan	1.1 Research, analyse and document resource requirements and develop an operational plan in consultation with relevant personnel, colleagues and specialist resource managers 1.2 Develop and/or implement consultation processes as an

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ELEMENT	PERFORMANCE CRITERIA
	integral part of the operational planning process 1.3 Ensure the operational plan includes key performance indicators to measure organisational performance 1.4 Develop and implement contingency plans for the operational plan 1.5 Ensure the development and presentation of proposals for resource requirements is supported by a variety of information sources and seek specialist advice as required 1.6 Obtain approval for the plan from relevant parties and explain the plan to relevant work teams
2. Plan and manage resource acquisition	2.1 Develop and implement strategies to ensure that employees are recruited and/or inducted within the organisation's human resources management policies, practices and procedures 2.2 Develop and implement strategies to ensure that physical resources and services are acquired in accordance with the organisation's policies, practices and procedures 2.3 Recognise and incorporate requirements for intellectual property rights and responsibilities in recruitment and acquisition of resources and services
3. Monitor and review operational performance	3.1 Develop, monitor and review performance systems and processes to assess progress in achieving profit and productivity plans and targets 3.2 Analyse and interpret budget and actual financial information to monitor and review profit and productivity performance 3.3 Identify areas of under-performance, recommend solutions and take prompt action to rectify the situation 3.4 Plan and implement systems to ensure that mentoring and coaching are provided to support individuals and teams to effectively, economically and safely use resources 3.5 Negotiate recommendations for variations to operational plans and gain approval from designated persons/groups 3.6 Develop and implement systems to ensure that procedures and records associated with documenting performance are managed in accordance with organisational requirements

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.5, 2.1, 2.2, 3.1, 3.2, 3.3, 3.4, 3.6	• Identifies and extracts relevant information from a range of complex texts • Gathers, interprets and analyses workplace documentation to determine requirements for the operational plan
Writing	1.1-1.5, 2.1, 2.2, 3.1-3.6	• Develops and documents a range of detailed texts relating to the management of an operational plan according to organisational requirements • Ensures the vocabulary, grammatical structures and conventions are appropriate for the context and target audience
Oral Communication	1.1, 1.2, 1.5, 1.6, 3.4, 3.5	• Presents information to a range of audiences using appropriate register, vocabulary and paralinguistic features • Listens and comprehends information from a variety of spoken exchanges with clients, co-workers and other stakeholders • Confirms understanding through questioning and active listening
Numeracy	1.1, 1.3, 1.4, 3.1-3.4	• Selects and uses mathematical problem-solving strategies to organise resource requirements, performance benchmarks and financial viability of the operational plan
Navigate the world of work	2.1, 2.2, 3.4, 3.6	• Monitors adherence to organisational policies, procedures and considers own role in terms of its contribution to broader goals of the work environment • Appreciates the implications of legal responsibilities with specific reference to health and safety
Interact with others	1.1, 1.2, 1.5, 1.6, 3.5	• Identifies and uses appropriate conventions and protocols when communicating with colleagues and external stakeholders • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction, influencing direction and taking a leadership role on occasion
Get the work done	1.1-1.5, 2.1, 2.2, 3.1, 3.3, 3.4, 3.6	• Takes responsibility for developing and implementing systems and processes to achieve organisational objectives, seeking advice, feedback and support as

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		required to assist in the development and planning phase • Sequences and schedules complex activities, monitors implementation, and manages relevant communication • Uses systematic analytical processes to aid decision making, identify potential problems and generate contingency plans or solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBMGT517 Manage operational plan	BSBMGT515A Manage operational plan	Updated to meet Standards for Training Packages. Edits to clarify intent of Performance Criteria. Additional performance criterion and evidence for intellectual property.	No equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBMGT517 Manage operational plan

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- develop and implement an operational plan using a variety of information sources and consultation (including using specialist advice if required) which includes:
  - resource requirements
  - key performance indicators
  - monitoring processes
  - contingency plans
- communicate effectively with relevant stakeholders to explain the plan and supporting information, seek approvals, negotiate variations and engage work teams
- develop and implement strategies to achieve the operational plan within the organisation's policies, practices and procedures including:
  - recruiting, inducting and developing personnel
  - acquiring physical resources and services
  - protecting intellectual property
  - making variations to the plan
  - monitoring and documenting performance.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe models and methods for operational plans
- explain the role of an operational plan in achieving the organisation's objectives
- explain budgeting processes

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- list alternative approaches to developing key performance indicators to meet business objectives
- outline the legislative and regulatory context relevant to the operational plan of the organisation
- outline the organisation's policies, practices and procedures that directly relate to the operational plan.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the management and leadership field of work and include access to:

- relevant legislation and regulations
- workplace documentation and resources
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBMKG412 Conduct e-marketing communications

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to prepare electronic advertisements for use in internet, email or facsimile marketing communications, and to evaluate their effectiveness in achieving marketing objectives.

It applies to individuals working in promotional roles who are required to use electronic communications and existing business websites to effectively convey marketing communications and achieve marketing objectives in accordance with marketing or e-marketing plans.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Development – Marketing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare electronic advertisements	1.1 Choose media for electronic advertisements in accordance with the organisation’s marketing (or e-marketing) strategy 1.2 Select multiple marketing channels to optimise marketing effort 1.3 Ensure copy and design elements communicate desired image, features and benefits of products or services, and suit

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ELEMENT	PERFORMANCE CRITERIA
	characteristics of chosen media 1.4 Position and size each element of advertisement to achieve balance and focus 1.5 Ensure typeface selections suit product, chosen media and central message of advertisement, and that layout achieves balance in its elements including white space and margins 1.6 Ensure any added sound, animation or graphics enhance content of advertisements and do not distract from message 1.7 Ensure advertisements meet requirements of marketing strategy as well as legal and ethical requirements
2. Use business website as e-marketing tool	2.1 Identify website marketing objectives in organisation's marketing (or e-marketing) strategy and plan 2.2 Ensure website design meets objectives and conveys required image of the business and features and benefits of its products or services 2.3 Ensure website content, site map, navigation buttons, frames and multiple pages are in accordance with marketing strategy and plan 2.4 Ensure website incorporates data recording, contacts and feedback mechanisms to allow evaluation of website as a marketing tool
3. Use e-marketing	3.1 Identify required media vehicles and website hotlinks for electronic advertisements, and negotiate contracts for website development where necessary to meet requirements of the marketing strategy, budget and legal and ethical requirements 3.2 Promote marketing channels to identified target market segments 3.3 Place or disseminate electronic advertisements in accordance with marketing strategy, media contracts, and legal and ethical requirements
4. Monitor and evaluate results of e-marketing	4.1 Monitor transmission of electronic advertisements or other e-marketing products and rectify any errors or omissions 4.2 Develop measures of effectiveness for e-marketing advertisements and monitor effectiveness 4.3 Evaluate effectiveness of e-marketing advertisements against measures of effectiveness and record outcomes in accordance with organisational requirements 4.4 Use outcomes of evaluation activities and other feedback from

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ELEMENT	PERFORMANCE CRITERIA
	marketing channels to plan for improvements to e-marketing strategies and products

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 1.7, 2.1-2.4, 3.1-3.3, 4.1-4.4	• Interprets textual information obtained from a range of sources and determines how content may be applied to individuals and to organisational requirements
Writing	1.3, 2.2-2.4, 3.2, 3.3, 4.1-4.4	• Integrates information from a number of sources to develop material that supports the purposes and format of the documentation using suitable grammatical structure and clear, logical language
Oral Communication	3.1, 3.2	• Articulates ideas and requirements clearly and creatively based on techniques appropriate to audience and environment • Elicits the view and opinions of others by listening and questioning
Numeracy	1.4, 1.5, 3.1, 4.2-4.4	• Uses basic mathematical skills to ensure advertisement layout designs are correct • Interprets and analyses statistical information to help design and determine measures of effectiveness
Navigate the world of work	1.1, 1.7, 3.1, 3.3, 4.3	• Appreciates the implications of ethical, legal and regulatory responsibilities related to own work • Adheres to organisational policies and procedures and considers own role in terms of its contribution to broader goals of the work environment
Interact with others	3.2, 3.3	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role
Get the work done	1.1-1.7, 2.1-2.4, 3.1, 4.2	• Develops plans to manage tasks with an awareness of how they may contribute to longer term operational and strategic goals • Takes responsibility for the outcomes of routine decisions related directly to own role • Understands the purposes, specific functions and key

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		features of common digital systems and tools and operates them effectively to complete routine tasks • Understands and explicitly applies some basic principles of analytical and lateral thinking • Recognises and takes responsibility for addressing predictable and some less predictable problems in familiar work contexts

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBMKG412 Conduct e-marketing communications	BSBMKG412A Conduct e-marketing communications	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBMKG412 Conduct e-marketing communications

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- develop electronic advertisement for a product or service using electronic media to convey marketing communications consistent with an organisational marketing strategy and objectives
- monitor and evaluate results of electronic advertisements and marketing.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify key provisions of relevant legislation, codes of practice and national standards that affect marketing operations
- describe industry products and services knowledge
- explain intellectual property requirements
- identify organisational structure, roles and responsibilities
- outline principles of marketing and advertising
- describe software applications used in conducting electronic advertising and marketing.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the business development – marketing field of work and include access to:

- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies and, where possible, real situations.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBMKG413 Promote products and services

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to coordinate and review the promotion of an organisation's products and services.

It applies to individuals with a broad knowledge of the promotion of products and services specific to an organisation. They may have responsibility to provide guidance or to delegate aspects of these tasks to others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Development – Marketing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan promotional activities	1.1 Identify and assess promotional activities to ensure compatibility with organisational requirements 1.2 Plan and schedule promotional activities according to the marketing needs of the organisation 1.3 Determine overall promotional objectives in consultation with designated individuals and groups 1.4 Ensure that timelines and costs for promotion of activities are

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ELEMENT	PERFORMANCE CRITERIA
	realistic and consistent with budget resources 1.5 Develop action plans to provide details of products and services being promoted
2. Coordinate promotional activities	2.1 Ensure personnel and resources to support promotional activities are identified and prepared to facilitate the achievement of promotional goals 2.2 Identify and agree roles and responsibilities for delivery of promotional services and allocate to relevant personnel 2.3 Establish and conduct relationships with targeted groups in a manner which enhances the positive image of the organisation 2.4 Use networks to assist in the implementation of promotional activities
3. Review and report on promotional activities	3.1 Analyse audience feedback and data to determine the impact of the promotional activity on the delivery of products and services 3.2 Assess effectiveness of planning processes to identify possible improvements in future activities 3.3 Collect feedback and provide to personnel and agencies involved in promotional activity 3.4 Analyse costs and time lines to evaluate the benefits accruing from the promotional activities 3.5 Prepare conclusions and recommendations from verifiable evidence and provide constructive advice on future directions of promotional activities

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 3.1	• Interprets, analyses and collates textual information relevant to promotional activities from a range of sources
Writing	1.2, 1.5, 2.3, 3.1, 3.3, 3.5	• Uses clear and specific language to develop formal and informal documents for different audiences in accordance with organisational requirements

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Oral Communication	1.3, 2.3, 3.3, 3.5	• Actively participates in verbal exchanges of ideas and elicits the views and opinions of others by listening and questioning • Uses clear and specific language to clarify, explain and present information relating to the promotional activity
Numeracy	1.4, 1.5, 3.1, 3.3, 3.4, 3.5	• Classifies, analyses and compares numeric information, including costs and timelines, relevant to the promotional activity
Navigate the world of work	1.1	• Adheres to legislative requirements and organisational policies and procedures
Interact with others	1.3, 2.3, 2.4, 3.3, 3.5	• Selects and uses appropriate conventions and protocols with a range of stakeholders to project a professional image while seeking or sharing information • Recognises the importance of building rapport to establish and maintain positive working relationships
Get the work done	1.2, 1.2, 1.4, 1.5, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 3.5	• Sequences and schedules complex activities, monitors implementation and manages relevant communication • Uses systematic, analytical processes in complex, non-routine situations, gathering relevant information and identifying and evaluating options against agreed requirements • Evaluates effectiveness of decisions in terms of how well they meet stated goals • Uses a range of digital tools to access data, and to extract, organise, integrate and share relevant information

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBMKG413 Promote products and services	BSBMKG413A Promote products and services	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBMKG413 Promote products and services

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify the context for the promotional activities including:
  - relevant legislation/regulations
  - organisation's goals, objectives, systems, policies and procedures
  - budget and timelines
  - marketing needs and, if defined, marketing plans
  - objectives of the promotional activities
- consult with relevant stakeholders to plan promotional activities to meet objectives, budget and timelines
- coordinate promotional activities including:
  - allocation of personnel, roles and responsibilities
  - sourcing other resources and promotional products as appropriate
  - use of networks and relationships
- analyse feedback and data to evaluate the effectiveness of planning processes and promotional activities and make recommendations on future directions of promotional activities.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the legislative and regulatory context of the organisation as relevant to the marketing plan
- outline the planning processes for organising promotional activities

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- explain the organisation's marketing objectives and how they support the overall business objectives
- explain how common promotional activities could be used to support the marketing objectives with reference to
  - advertising
  - client functions
  - employee functions
  - media announcements
  - product launches
  - web pages.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the business development – marketing field of work and include access to:

- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBMKG434 Promote products and services

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to coordinate and review the promotion of an organisation's products and/or services.

The unit applies to individuals with a broad knowledge of the promotion of products and services specific to an organisation. They may have responsibility to provide guidance or to delegate aspects of these tasks to others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical Skills – Marketing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish promotional activities	1.1 Identify need for promotion of product or service according to organisational and market requirements 1.2 Identify overall promotional objectives in consultation with relevant stakeholders 1.3 Analyse and select promotional activity options for meeting promotional objectives 1.4 Determine contingency strategies for selected activity options
2. Coordinate promotional activities	2.1 Allocate roles and responsibilities for delivery of promotional services and communicate to relevant personnel 2.2 Monitor progress of promotional activities according to action plan

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Identify and address potential issues during implementation within scope of own responsibility 2.4 Apply determined contingency strategies, if required
3. Review promotional activities	3.1 Analyse effectiveness of planning processes using feedback and data 3.2 Identify possible improvements in future activities 3.3 Collect feedback and provide to others involved in promotional activity 3.4 Analyse costs and timelines for benefits accruing from the promotional activities 3.5 Prepare conclusions and recommendations relating to effectiveness of promotional activities

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets, analyses and collates textual information relevant to promotional activities from a range of sources
Writing	• Uses clear and specific language to develop formal and informal documents for different audiences in accordance with organisational requirements
Oral Communication	• Actively participates in verbal exchanges of ideas and elicits the views and opinions of others by listening and questioning • Uses clear and specific language to clarify, explain and present information relating to the promotional activity
Numeracy	• Classifies, analyses and compares numeric information, including costs and timelines, relevant to the promotional activity
Self-management	• Adheres to legislative requirements and organisational policies and procedures • Evaluates effectiveness of decisions in terms of how well they meet stated goals
Teamwork	• Selects and uses appropriate conventions and protocols with a range of stakeholders to project a professional image while seeking or sharing information • Recognises the importance of building rapport to establish and maintain positive working relationships
Planning and	• Sequences and schedules complex activities, monitors

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Skill	Description
organising	implementation and manages relevant communication
Technology	• Uses a range of digital tools to access data, and to extract, organise, integrate and share relevant information

Unit Mapping Information

Supersedes and is equivalent to BSBMKG413 Promote products and services.

Supersedes but is not equivalent to:

- BSBPRO301 Recommend products and services
- BSBPRO401 Develop product knowledge.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBMKG434 Promote products and services

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- Promote at least three products or services.

In the course of the above, the candidate must:

- identify the context for the promotional activities, including:
  - relevant legislation and regulations
  - organisation's goals, objectives, systems, policies and procedures
  - budget and timelines
  - marketing needs and, if defined, marketing plans
  - objectives of the promotional activities
- consult with relevant stakeholders to plan promotional activities to meet objectives, budget and timelines
- coordinate promotional activities including:
  - allocating roles and responsibilities
  - using communication channels to convey responsibilities
  - obtaining relevant resources and promotional products
- analyse feedback and data to evaluate the effectiveness of planning processes and promotional activities and make recommendations on future directions of promotional activities.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative and regulatory context of the organisation as relevant to promotional activities
- content of action plans, including:
  - task steps

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  - costs
  - timeframe
  - resources and responsibilities
- internal and external stakeholders involved in coordinating promotional activities
- planning processes for organising promotional activities
- organisation's marketing objectives and how they support the overall business objectives
- common promotional activities that could be used to support the marketing objectives.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- legislation, regulations, standards and codes for promoting products and services
- workplace documentation and resources for promoting products and services.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBMKG523 Design and develop an integrated marketing communication plan

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to identify and evaluate the range of marketing communication options and media, to design an integrated marketing communication plan, and to develop a marketing communication brief and creative brief reflecting client needs and preferences.

It applies to individuals working in a supervisory or management marketing or advertising role, within a marketing or advertising team or media organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Development – Marketing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine marketing communication requirements	1.1 Confirm marketing communication purpose and objectives with client 1.2 Obtain comprehensive client and product information 1.3 Review outcomes of previous marketing communication with client

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Confirm budget allocation with client
2. Develop marketing communication brief	2.1 Develop brief, ensuring it contains a client profile, purpose statement and objectives reflecting client needs 2.2 State marketing communication objectives in measurable terms and provide specific guidelines on what is to be accomplished by marketing communication 2.3 Define key characteristics, competitive factors and market situation facing product or service 2.4 Include a summary of information on target audience, and legal and ethical constraints
3. Design integrated marketing communication strategy	3.1 Select marketing communication options appropriate for marketing communication brief 3.2 Critically analyse advantages and disadvantages of each marketing communications variable and media vehicles for product or service 3.3 Determine media characteristics matching brief requirements 3.4 Analyse media consumption habits for primary and supplementary marketing media among target audiences 3.5 Evaluate media styles against the brand character of product or service being marketed 3.6 Compare advantages and disadvantages of selecting multiple media in a media plan 3.7 Develop and apply criteria for selecting multiple media combinations
4. Select and recommend media for marketing strategy	4.1 Select media vehicles that match requirements of marketing brief for product or service 4.2 Recommend primary and secondary marketing media that meet target audience preferences 4.3 Ensure recommended media meet the brief, client's requirements, and legal and ethical constraints
5. Develop creative brief	5.1 Identify creative content for chosen media using consumer language in the brief 5.2 Identify pitch or appeal for product or service in the brief that meets client requirements 5.3 Identify supporting information required for consumer understanding of product or service in the brief

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ELEMENT	PERFORMANCE CRITERIA
	5.4 Ensure budget for creative work, consistent with overall marketing budget, is contained in the brief 5.5 Incorporate deadline for creative work consistent with overall media schedule in the brief

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 1.3, 2.1-2.4, 3.3-3.7, 5.3	• Accesses information from a range of sources and identifies, interprets and analyses information relevant to marketing activities
Writing	1.1, 1.3, 1.4, 2.1-2.4, 5.1-5.5	• Uses clear, specific and culturally appropriate language to articulate potentially complex ideas, issues and concepts to clients • Uses appropriate formats and structures information logically to present ideas and recommendations to clients
Oral Communication	1.1, 1.3, 1.4	• Actively participates in verbal exchanges by listening and questioning to clarify and confirm information • Uses appropriate language and non-verbal features to clarify, explain and present information on marketing activities
Numeracy	1.4, 2.2, 3.4, 5.4	• Collates and interprets numeric information to analyse trend data, develop targets and prepare budgets for marketing activities
Navigate the world of work	2.4, 4.3	• Considers legal and ethical implications in relation to own role
Get the work done	1.1-1.4, 3.1-3.7, 4.1, 4.2, 5.1-5.5	• Plans, organises and implements tasks to achieve outcomes, with an awareness of client requirements, time and budgetary restraints • Makes decisions by systematically analysing information, identifying and evaluating options against set criteria, and choosing most appropriate option • Evaluates outcomes of decisions to identify opportunities for improvement • Develops new and innovative ideas through

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		exploration, analysis and critical thinking

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBMKG523 Design and develop an integrated marketing communication plan	BSBMKG523A Design and develop an integrated marketing communication plan	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBMKG523 Design and develop an integrated marketing communication plan

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- produce an integrated strategic marketing communication plan for presentation to a client, including:
  - purpose statement
  - definition of target audience
  - analysis of product or service
  - legal and ethical constraints
  - marketing communication functions and media vehicles chosen, with rationale for each
  - creative brief for media options
  - schedule for creative work
  - budgetary allocation for each media vehicle.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline economic, social and industry trends relevant to choice of appropriate media options
- analyse industry products or services to recommend appropriate media options
- summarise key provisions of relevant legislation, codes of practice and national standards affecting marketing operations
- explain principles of consumer behaviour and influences on buyer behaviour
- summarise range of marketing communication options for different markets
- describe and contrast range of media vehicles for marketing communication options.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the business development – marketing field of work and include access to:

- office equipment and resources
- relevant legislation, regulations, standards and codes
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBOPS304 Deliver and monitor a service to customers

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to identify customer needs, deliver and monitor customer service and identify improvements in the provision of customer service.

The unit applies to those who apply a broad range of competencies in various work contexts. In this role, individuals often exercise discretion and judgement using appropriate knowledge of customer service. They provide technical advice and support to customers over short or long-term interactions.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Competence – Business Operations

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify customer needs	1.1 Identify and clarify customer needs and expectations 1.2 Evaluate customer needs and determine priorities for service delivery according to organisational requirements 1.3 Inform customers about available choices for meeting their needs and assist selection of preferred options 1.4 Identify limitations in addressing customer needs and seek assistance from designated individuals, where required
2. Deliver a service to customers	2.1 Provide service to meet identified customer needs according to organisational and legislative requirements 2.2 Establish and maintain rapport with customers

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Manage customer complaints according to organisational and legislative requirements 2.4 Provide assistance and respond to customers with specific needs according to organisational and legislative requirements 2.5 Identify and use available opportunities to promote and enhance services and products to customers
3. Evaluate customer service delivery	3.1 Review customer satisfaction with service delivery using verifiable evidence according to organisational and legislative requirements 3.2 Seek and respond to customer feedback according to organisational policies and procedures 3.3 Identify opportunities to enhance the quality of customer service 3.4 Document recommendations for customer service improvements 3.5 Submit recommendations to relevant personnel according to organisational policies and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Learning	• Identifies and follows up on opportunities to improve work practices and outcomes
Oral communication	• Provides information or advice using structure and language to suit the audience • Asks questions and listens to gain information or confirm understanding
Reading	• Evaluates textual information to determine customer service requirements • Proofreads texts for clarity of meaning and accuracy of grammar and punctuation
Writing	• Completes responses to customer complaints in required format • Prepares reports using sequencing, format and words to communicate recommendations clearly and effectively
Planning and organising	• Complies with organisational policies and procedures relevant to role • Plans and implements systems to gather and organise information

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Skill	Description
Problem-solving	• Uses problem solving skills to analyse and respond to customer complaints or enquiries
Teamwork	• Selects and uses appropriate communication conventions to establish connections, build rapport, seek information and develop professional working relationships • Adjusts personal communication style in response to the opinions, values and particular needs of others

Unit Mapping Information

Supersedes and is equivalent to BSBCUS301 Deliver and monitor a service to customers.

Supersedes but is not equivalent to:

- BSBCUE309 Develop product and service knowledge for customer engagement operation
- BSBEDU303 Assist with the provision of international education information
- BSBINT303 Organise the importing and exporting of goods
- BSBINT304 Assist in the international transfer of services
- BSBSLS407 Identify and plan sales prospects.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBOPS304 Deliver and monitor a service to customers

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- deliver a service to at least three different customers, including:
  - using communication skills to establish rapport and build relationships with customers according to organisational requirements
  - identifying customer needs using appropriate questioning and active listening skills
  - providing customer service according to organisational requirements
  - responding to and recording customer feedback and action taken according to organisational standards, policies and procedures
  - producing a report which identifies and recommends ways to improve service delivery.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key provisions of customer service legislation and consumer law
- organisational policies and procedures relating to customer service, including complaints handling
- common forms of verifiable evidence that could be used to review customer satisfaction
- customer service standards and protocols for serving customers, including customers with specific needs.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- technology required to gather and provide information and assistance to customers

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- workplace documents, and organisational policies and procedures relating to customer service
- examples of customer complaints and feedback.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBPEF202 Plan and apply time management

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to implement time management processes to organise and complete work tasks. It also addresses skills and knowledge to seek and review feedback for performance improvement regarding time management and use technology appropriate to the task.

The unit applies to individuals working under direct supervision. These individuals apply basic skills and knowledge in a broad range of work settings.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking & Problem Solving – Personal Effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Organise work schedule	1.1 Discuss and agree on work goals and plans with assistance from relevant personnel 1.2 Identify relationship between own work goals and plans, and organisational goals and plans 1.3 Research time management techniques and strategies 1.4 Plan and prioritise work tasks within allocated timeframes
2. Complete work tasks	2.1 Perform tasks according to designated timelines and instructions 2.2 Seek assistance from colleagues when difficulties arise in achieving allocated tasks

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Identify factors affecting work plan 2.4 Communicate progress on work plan to relevant personnel according to organisational policies and procedures
3. Review work performance	3.1 Seek feedback on time management from relevant personnel 3.2 Record changes to time management approach according to task instructions 3.3 Identify and plan opportunities for improvement in discussion with colleagues

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Identifies and interprets textual information to determine and adhere to organisational and task requirements
Writing	• Completes required documents using organisational formats
Oral communication	• Uses listening and questioning techniques to seek information and confirm understanding • Participates in verbal interactions using language and features suitable to audience and context
Numeracy	• Interprets numerical information related to timeframes
Enterprise and initiative	• Complies with organisational policies, procedures and standards
Planning and organising	• Prioritises work and completes activities within designated timeframes • Identifies and solves routine problems
Technology	• Selects and uses appropriate digital tools to complete tasks

Unit Mapping Information

Supersedes and is equivalent to BSBWOR202 Organise and complete daily work activities.

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Assessment Requirements for BSBPEF202 Plan and apply time management

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop and implement at least one time management plan with support of relevant personnel.

In the course of the above, the candidate must:

- complete each work task within specified timeframe, seeking opportunities to use digital tools where applicable
- seek and use feedback from others to monitor and improve work performance.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- time management techniques and strategies
- features of a time management plan
- organisational standards, policies and procedures relevant to own work role
- relationship between own work goals and plans and organisation's goals and plans
- factors affecting work progress and performance improvement techniques.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to challenges and situations to demonstrate application of performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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BSBPEF301 Organise personal work priorities

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to organise personal work schedules, to monitor and obtain feedback on work performance and to maintain required levels of competence.

The unit applies to individuals who exercise discretion and judgement and apply a broad range of competencies in various work contexts.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking & Problem Solving – Personal Effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Organise and complete own work schedule	1.1 Develop work goals and key performance indicators (KPIs) according to task and organisational requirements 1.2 Prioritise workload according to task timeframes 1.3 Identify factors affecting achievement of work objectives 1.4 Develop personal work plans
2. Evaluate own work performance	2.1 Identify variations between expected and actual work performance according to task requirements and KPIs 2.2 Report variations to relevant personnel 2.3 Seek feedback from relevant personnel for solutions to minimise variations in expected and actual work outputs

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ELEMENT	PERFORMANCE CRITERIA
	2.4 Research sources of stress and access appropriate supports according to organisational policies and procedures
3. Coordinate personal skill development and learning	3.1 Identify personal and professional development needs for job role 3.2 Identify opportunities to undertake personal skill development activities in consultation with supervisor 3.3 Access professional development opportunities 3.4 Record professional development undertaken for continuous learning and career development process 3.5 Incorporate feedback into review of further learning needs

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Employs a range of approaches and investigative techniques to source the knowledge necessary to arrange personal learning experiences
Reading	• Interprets textual information to determine organisation's procedures, own work performance and objectives
Writing	• Prepares written reports and workplace documents that communicate information clearly and effectively
Oral communication	• Provides and receives feedback using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	• Complies with organisational policies, procedures and protocols
Teamwork	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role • Proactively collaborates with others to achieve specific goals
Planning and organising	• Plans and organises work commitments to ensure deadlines and objectives are met • Uses formal analytical thinking techniques to recognise and respond to routine problems
Technology	• Uses digital systems and tools to enter, store and monitor information

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Unit Mapping Information

Supersedes and is equivalent to BSBWOR301 Organise personal work priorities and development.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBPEF301 Organise personal work priorities

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare and implement a personal work plan.

In the course of the above, the candidate must:

- prepare a work plan according to organisational requirements and work objectives
- use technology to schedule, prioritise and monitor completion of tasks in a work plan
- assess and prioritise own work tasks and address contingencies
- monitor and assess personal performance against job role requirements by seeking feedback from relevant personnel
- identify personal development needs and access, complete and record skill development and learning.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational policies and procedures relevant to work tasks
- goals, objectives and key performance indicators for task within scope of job role
- methods to elicit, analyse and interpret feedback when communicating with other people in the workplace
- content of work plans including:
  - timeframes
  - tasks requirements
  - risks
  - contingencies for identified risks
- types of personal learning and professional development requirements
- principles and techniques of goal setting, measuring performance and time management

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- signs and sources of stress and strategies to deal with stress in the workplace
- methods to identify and prioritise personal learning needs.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- challenges and situations to demonstrate application of performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBPEF402 Develop personal work priorities

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to plan and prioritise own work tasks. It also addresses the skills and knowledge to monitor and obtain feedback on personal work performance.

The unit applies to individuals who are required to design their own work schedules and work plans and to establish priorities for their work. They will typically hold some responsibilities for the work of others and have some autonomy in relation to their own role.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking & Problem Solving – Personal Effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan personal work schedule	1.1 Identify task requirements 1.2 Identify own accountabilities in line with task requirements 1.3 Assess barriers for performance of personal accountabilities 1.4 Develop a personal work schedule
2. Implement personal work schedule	2.1 Communicate personal work schedule to relevant personnel 2.2 Monitor own performance according to personal work schedule 2.3 Document variations between expected and actual work performance according to task requirements and communicate to relevant personnel

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ELEMENT	PERFORMANCE CRITERIA
3. Review personal work priorities	3.1 Seek and evaluate feedback from relevant stakeholders on own work performance 3.2 Analyse variations between expected and actual work performance 3.3 Update personal work schedule according to internal and external feedback and changes in circumstances

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Develops strategies to reflect on own performance and obtain feedback
Reading	• Identifies and applies textual information from relevant sources to understand organisation's policies and practices
Writing	• Prepares written reports and workplace documentation that communicate complex information clearly and effectively
Numeracy	• Analyses numerical information related work accountabilities
Enterprise and initiative	• Identifies and understands roles and responsibilities in relation to organisational objectives, policies and procedures
Planning and organising	• Plans, organises and implements tasks to meet organisational requirements • Uses the main features and functions of digital technologies and tools to complete work tasks efficiently and effectively

Unit Mapping Information

Supersedes and is equivalent to BSBWOR404 Develop work priorities.

Supersedes but is not equivalent to:

- BSBSMB408 Manage personal, family, cultural and business obligations
- BSBWOR424 Develop a time management plan.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBPEF402 Develop personal work priorities

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop, implement and review one personal work schedule.

In the course of the above, the candidate must:

- identify personal responsibilities and barriers to their fulfilment according to task requirements
- prepare a personal work schedule
- communicate work schedule to relevant personnel
- monitor personal work performance to identify variations between expected and actual work performance
- review own work performance against workgroup objectives through self-assessment and seeking and acting on feedback from internal and external stakeholders.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- content of work plans including:
  - resource requirements
  - stakeholder needs
  - workgroup targets
- business technology applications to schedule tasks and plan work
- methods of personal work performance review including:
  - self-assessment
  - feedback from others
- techniques to prepare personal plans and establish priorities
- methods to elicit, analyse and interpret feedback.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to challenges and situations to demonstrate the application of performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBPRO401 Develop product knowledge

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to develop product knowledge in preparation for the sales process.

It applies to individuals who need to solve a defined range of unpredictable problems, analyse and evaluate information from a variety of sources and who may provide leadership and guidance to others with some limited responsibility for the output of others.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Industry Capability – Product Skills and Advice

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Acquire knowledge of products in a specified area	1.1 Identify information sources about products in a specified area and evaluate them for reliability and validity 1.2 Identify product purpose/s and use/s 1.3 Identify key features of the product/s 1.4 Identify product strengths and weaknesses 1.5 Articulate guarantees and warranties and identify service support details

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ELEMENT	PERFORMANCE CRITERIA
2. Convert product knowledge into benefits	2.1 Identify features of the product which have potential buyer appeal 2.2 Present features of the product which have buyer appeal as benefits to the buyer 2.3 Present product benefits within the context of organisational requirements and legislation
3. Evaluate competitors' products	3.1 Use a range of information sources to identify competitors' products 3.2 Compare features, benefits, strengths and weaknesses of competitors' products with own products 3.3 Establish relative standing of the organisation's product with the competitors' product/s and communicate differences to the buyer

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 1.4, 2.1, 3.1, 3.2, 3.3	• Identifies, interprets, understands and compares information to monitor and evaluate quality of product and services and check against client requirements
Writing	1.1, 1.5, 2.2, 2.3, 3.2	• Records results of product evaluations to show clear comparisons of features, benefits and weaknesses • Uses clear and specific language to develop documents for different audiences in accordance with organisational requirements
Oral Communication	2.2, 2.3, 1.5, 3.3	• Provides recommendations using language appropriate to the purpose and audience
Numeracy	1.3, 1.4, 3.2, 3.3	• Analyses numerical information to measure, compare and evaluate features
Navigate the world of work	2.3	• Understands and follows organisational policies and procedures and legislative requirement relevant to own role
Get the work	1.1, 3.1, 3.3	• Plans and implements tasks required to achieve required outcomes

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done		• Analyses information to decide on appropriate recommendations

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBPRO401 Develop product knowledge	BSBPRO401A Develop product knowledge	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBPRO401 Develop product knowledge

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use valid and reliable sources to gather information about the organisation's products and competitors' products
- determine buyer needs and present key features and benefits of product to match needs, in accordance with organisational and legislative obligations
- compare competitors' products with own organisation's products and communicate differences to buyer.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list sources of information for own organisation's products and competitors' products
- explain why it is important to discuss features, benefits, strengths and weaknesses when describing products
- summarise industry competitors, including products offered and potential buyer markets
- outline organisational policies and procedures, relevant to the sales process
- outline the key provisions of relevant legislation, regulations, standards and codes of practice that are relevant to the sales process.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the industry capability – product skills and advice field of work and include access to:

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- information sources regarding an organisation's and competitors' products, service or ideas
- office equipment and resources
- relevant organisational policies and procedures
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBPUR402 Negotiate contracts

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to negotiate terms of contracts with suppliers, and prepare and finalise contracts.

It applies to individuals who negotiate contracts as part of a broad purchasing role but are not specialist legal practitioners. They are required to negotiate and formalise complex purchasing arrangements involving significant risk and/or significant expenditure and detailed legal and documentation arrangements and are typically guided by organisational contract negotiation guidelines. They work under minimal supervision of a senior purchasing manager or in consultation with senior management.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Administration – Purchasing and Contracting

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Negotiate terms of contracts with suppliers	1.1 Offer advice and undertake negotiations without prejudice 1.2 Advise suppliers of the organisation’s intent to accept their offers 1.3 Negotiate issues with suppliers 1.4 Determine desired outcomes, negotiation plans and schedules

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ELEMENT	PERFORMANCE CRITERIA
	for negotiations 1.5 Undertake negotiations and reach agreements with suppliers in accordance with plans 1.6 Negotiate and document contract requirements to the satisfaction of the organisation and suppliers
2. Prepare contracts	2.1 Draft required contracts using legal expertise if required 2.2 Distribute draft contracts to relevant personnel and suppliers 2.3 Ensure any discrepancies or disagreements are clarified and resolved to the satisfaction of all parties 2.4 Ensure checks of the legality and validity of draft contracts are made 2.5 Obtain approvals to sign contracts
3. Finalise contracts	3.1 Ensure contracts are signed and exchanged between the organisation and suppliers 3.2 Ensure contracts and related documents are stored and safeguarded 3.3 Advise relevant personnel of contract requirements 3.4 Advise unsuccessful suppliers of non-acceptance of offers

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.5, 2.1, 2.4	• Interprets and analyses textual information from a range of sources and identifies relevant key information to assist in the negotiation process
Writing	1.2, 1.6, 2.1, 2.3, 2.5, 3.3, 3.4	• Develops material to convey explicit information and results using clear and detailed language appropriate to audience and context
Oral Communication	1.1-1.3, 1.5, 1.6, 2.5, 3.3	• Uses clear language and suitable features to provide information to a variety of individuals • Uses active listening and questioning techniques to convey and clarify information

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Navigate the world of work	1.5, 1.6, 2.1, 2.4	• Monitors adherence to implicit and explicit organisational procedures and policies • Recognises the implications of legal and regulatory responsibilities related to own work and is beginning to recognise some general legal principles applicable across work contexts
Interact with others	1.1-1.3, 1.5, 1.6, 2.2, 2.3, 2.5, 3.1, 3.3, 3.4	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role • Collaborates and negotiates with others as part of familiar routine activities
Get the work done	1.4, 2.2, 2.3, 3.1, 3.2	• Takes responsibility for planning, sequencing and prioritising tasks for efficient and effective outcomes • Implements standard procedures to make routine decisions • Recognises and takes responsibility for addressing predictable problems in familiar work contexts • Understands the importance of secure information in relation to own work

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBPUR402 Negotiate contracts	BSBPUR402B Negotiate contracts	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBPUR402 Negotiate contracts

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- produce a documented agreement of terms with suppliers
- draft and complete a contract with a supplier for goods and services
- produce a document to inform successful and unsuccessful suppliers.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and provide an overview of key provisions of relevant legislation, codes of practice and national standards that affect purchasing
- outline organisation practices, policies and procedures for purchasing
- explain purchasing and procurement principles for:
  - accountability
  - probity and transparency
  - risk management
  - value for money.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the administration – purchasing and contracting field of work and include access to:

- organisation policies and procedures
- purchasing strategies and relevant purchasing records
- office equipment and supplies

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- case studies and, where possible, real situations.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSLS407 Identify and plan sales prospects

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to identify potential sales prospects by applying prospecting methods, and manage own sales performance by establishing a sales plan, while managing stress, time and sales-related paperwork.

It applies to individuals working in a sales-related position in a small, medium or large enterprise in a wide variety of industries, who identify, collate and follow up sales prospect information to generate leads. Individuals undertaking this unit may be at entry level, or have experience in sales sufficient to provide advice and support about aspects of sales solutions as part of a sales team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Development – Sales

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Employ prospecting methods and qualify prospects	1.1 Identify, consider and evaluate strengths and limitations of range of primary and secondary prospecting methods 1.2 Select prospecting methods to match market to which the product or service is targeted 1.3 Target present, previous and new clients through chosen

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ELEMENT	PERFORMANCE CRITERIA
	prospecting methods 1.4 Research and establish criteria for qualifying leads according to buyer accessibility, buyer motives, product affordability, purchase authority, legal compliance and return for seller 1.5 Ensure established criteria represent a standard against which buying potential of individuals and groups is gauged
2. Manage prospect information	2.1 Develop and implement system for recording prospect information 2.2 Monitor and evaluate effectiveness of system for recording prospect information 2.3 Refine system for recording prospect information based on evaluation
3. Establish individualised sales plan	3.1 Establish individual sales goals and quotas to focus work activities, based on organisational sales and marketing objectives 3.2 Establish consultation and communication structures with clients and supervisors 3.3 Plan and document individualised sales plan to achieve sales goals and quotas within a work system constructed against clear timeframes 3.4 Monitor and adjust sales plan to established goals and quotas 3.5 Evaluate sales plan and adjust where necessary
4. Complete sales paperwork and reports	4.1 Establish system to collect, record and organise data associated with sales process 4.2 Complete routine reports at regular intervals according to organisational requirements 4.3 Use available technology to facilitate record-keeping and production of sales reports
5. Organise workload effectively	5.1 Establish routines to provide structure for work and to manage workload 5.2 Allocate time for specific work tasks and unanticipated events and activities 5.3 Conduct analysis of time spent on work-related activities and adjust time spent on tasks, if required 5.4 Apply time-management strategies to minimise non-productive sales activities 5.5 Delegate tasks to individuals or sales team members to share

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ELEMENT	PERFORMANCE CRITERIA
	workload as appropriate 5.6 Identify and monitor symptoms of stress and seek expert assistance

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.5, 2.1-2.3, 3.1-3.5, 4.1-4.3, 5.1-5.4	• Analyses and evaluates textual information to develop research strategies, integrate facts and ideas and meet organisational requirements
Writing	1.1-1.5, 2.1-2.3, 3.1-3.5, 4.1-4.3, 5.1-5.4	• Creates documents using specific and detailed language to convey explicit information, requirements and recommendations
Oral Communication	1.3, 5.2, 5.5	• Presents information using clear language suited to the audience • Uses listening and questioning skills to check and confirm understanding
Numeracy	1.4-1.5, 3.1, 3.3-3.5, 5.2-5.4	• Applies ratios and percentages and relevant formulae to data to calculate and interpret time durations and establish financial goals
Navigate the world of work	1.4, 3.1, 3.4, 4.2	• Follows explicit and implicit organisational objectives, protocols and legal requirements
Interact with others	1.3, 3.2, 5.5, 5.6	• Tailors communication to achieve purpose, demonstrating a sophisticated understanding of audience needs • Collaborates with others to achieve organisational objectives
Get the work done	1.1, 1.3, 1.4, 2.1, 2.2, 3.3-3.5, 4.1-4.3, 5.1, 5.3-5.6	• Sequences and schedules complex activities of self and others and monitors implementation • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information and evaluating options against agreed criteria • Monitor implementation of solutions and reflects on outcomes to identify appropriate action

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		• Develops new and innovative ideas through exploration, analysis and critical thinking • Uses main features and functions of digital tools to complete work tasks and access information

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBSLS407 Identify and plan sales prospects	BSBSLS407A Identify and plan sales prospects	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSLS407 Identify and plan sales prospects

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- evaluate and select the use and management of different sales prospecting methods
- develop, monitor and refine a system for recording prospecting methods
- plan, document and monitor individualised sales plan
- establish data collection system
- use appropriate technology
- organise, analyse and delegate workloads to maximise productivity
- identify and monitor symptoms of stress.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe information management strategies used to manage prospect and sales data
- identify key principles associated with self-management
- outline key provisions of relevant legislation, codes of practice and national standards related to the sales environment
- describe prospecting methods used in sales process
- identify principles of buyer motives
- describe strategies and techniques used to prevent and manage stress.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the business development – sales field of work and include access to:

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- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSLS408 Present, secure and support sales solutions

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to present sales solutions that respond to specific buying needs of a client, and to use sales processes associated with securing prospect commitment to proceed with a sale.

It also includes attending to post-sales activities that build and strengthen the partnership between a salesperson and client, and enhance the likelihood of future sales.

It applies to individuals working in sales-related positions in a small, medium or large enterprise, in a wide variety of industries, who may provide sales solutions individually, or provide advice and support on aspects of sales solutions to support a sales team.

No licensing, legislative or certification requirements apply to this unit at the time of publication

Unit Sector

Business Development – Sales

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for sales presentation	1.1 Obtain and organise products, ideas and services for use within sales presentation 1.2 Review product information to ensure familiarity with products

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Identify sales tactics, and assess and choose options that meet needs and preferences of the prospect 1.4 Consider variety of sales solutions and prepare to meet buyer needs 1.5 Identify and select sales aids 1.6 Identify alternatives for prospects and assess in relation to anticipated buyer needs
2. Present sales solution	2.1 Use gestures, posture, body language, facial expressions and voice to create a supportive selling environment 2.2 Use listening skills and open-ended questions to identify buyer needs, preferences, motives and objections 2.3 Adjust presentation to match needs and preferences of buyer 2.4 Use persuasive communication techniques to secure buyer interest 2.5 Ensure presentation demonstrates and communicates key features of product and emphasises benefits in relation to identified buyer needs 2.6 Obtain and present proof of benefits through product purchase 2.7 Use sales aids to build buyer understanding of how product aligns with needs
3. Respond to buyer signals	3.1 Identify and assess verbal and non-verbal buying signals 3.2 Use probing to identify source of buyer resistance 3.3 Identify strengths and limitations of buyer resistance strategies 3.4 Select and implement strategy for managing buyer resistance 3.5 Use trial closes strategically during different stages of sales process
4. Negotiate and finalise sale	4.1 Initiate formal close to sales process following one or more trial closes 4.2 Select strategy to close sale, and use supportive and confirming language to support closure 4.3 Negotiate conditions of agreement, outline a summary of agreement to buyer, and confirm buyer's decision 4.4 Provide advice on financing arrangements, if required 4.5 Prepare and complete sales documents, and process and monitor client order

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ELEMENT	PERFORMANCE CRITERIA
	4.6 Identify and present cross-selling opportunities to buyer
5. Support post-sale activities	5.1 Ensure contact is made with buyer post-sale to ensure agreed expectations have been met 5.2 Provide technical assistance or advice and assist clients to access appropriate after-sales support 5.3 Use feedback solicitation regarding sales process and product satisfaction 5.4 Address and resolve service problems and difficulties identified through feedback 5.5 Develop and implement client loyalty strategies to secure buyer loyalty and facilitate ongoing contact 5.6 Offer and implement additional sales solutions and benefits to clients when opportunities arise

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.6, 2.7, 4.3-4.6, 5.1-5.6	• Analyses and evaluates textual information to develop research strategies, integrate facts and ideas, and meet organisational requirements
Writing	1.1, 4.5-4.6, 5.1-5.6	• Creates documents using specific and detailed language to convey explicit information, requirements and recommendations
Oral Communication	1.1, 2.1-2.7, 3.1-3.5, 4.1-4.6, 5.1-5.6	• Obtains information by listening and questioning, and • Participates in discussions using detailed, clear and persuasive language to contribute details, express requirements and provide advice
Numeracy	2.6, 4.3-4.5, 5.5	• Identifies, interprets and compares mathematical information in simple and familiar written texts
Interact with others	2.3, 2.4, 3.2-3.4, 4.2, 5.3-5.5	• Uses a range of interpersonal skills to build rapport and establish relationships with others • Tailors communication to achieve purpose, demonstrating a sophisticated understanding of audience needs

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Get the work done	1.1-1.3, 2.1-2.7, 3.2, 3.4, 3.5, 4.1-4.6, 5.1-5.6	• Sequences and schedules complex activities to achieve outcomes in a timely fashion • Uses systematic, analytical processes in complex, non-routine situations, setting goals, designing strategies, gathering relevant information and evaluating options • Uses formal and informal processes to monitor implementation of solutions and reflect on outcomes • Uses main features and functions of digital tools to complete work tasks and access information

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBSLS408 Present, secure and support sales solutions	BSBSLS408A Present, secure and support sales solutions	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSLS408 Present, secure and support sales solutions

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify principles of effective sales presentation
- identify buyer needs and present sales solution
- manage buyer resistance
- finalise a sale
- implement support for post-sale activities.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- demonstrate detailed product knowledge, including product:
  - advantages and disadvantages
  - features
  - service benefits
- identify materials and aids that support presentations
- identify principles for achieving an effective sales presentation mix
- describe statistical methods used to demonstrate sales performance
- describe strategies used to:
  - manage client accounts
  - build client goodwill
  - develop client loyalty.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the business development – sales field of work and include access to:

- office equipment and resources
- support materials for effective presentations
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSMB406 Manage small business finances

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to implement and review financial management strategies on a regular basis.

It applies to individuals who operate a small business that stands alone, or is part of a department within a larger organisation. Individuals in this role interpret financial reports and other numerical data to develop financial management strategies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Small and Micro Business

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Implement financial plan	1.1 Identify financial information requirements and obtain specialist services, as required, to profitably operate the business in accordance with the business plan 1.2 Produce financial budgets or projections, including cash flow

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ELEMENT	PERFORMANCE CRITERIA
	estimates, as required for each forward period, and distribute to relevant people in accordance with legal requirements 1.3 Negotiate, secure and manage business capital to best enable implementation of the business plan and to meet requirements of financial backers 1.4 Develop and maintain strategies to enable adequate financial provision for taxation in accordance with legal requirements 1.5 Develop, monitor and maintain client credit policies, including contingencies for debtors in default, to maximise cash flow 1.6 Select key performance indicators to enable ongoing monitoring of financial performance 1.7 Record and communicate financial procedures to relevant people to facilitate implementation of the business plan
2. Monitor financial performance	2.1 Regularly monitor and report on financial performance targets, and analyse data to establish extent to which the financial plan has been met 2.2 Monitor marketing and operational strategies for their effects on the financial plan 2.3 Calculate and evaluate financial ratios according to own or industry benchmarks 2.4 Assess financial plan to determine whether variations or alternative plans are needed, and change as required

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.4, 2.1, 2.4	• Evaluates complex text to determine legislative, regulatory and workplace documentation
Writing	1.2-1.5, 1.7, 2.1	• Prepares written reports and workplace documentation that communicate complex information clearly and effectively
Oral Communication	1.3, 1.7, 2.1	• Articulates clearly using specific and relevant language suitable to audience to convey requirements, and employs listening and questioning techniques to

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		confirm understanding • Participates in verbal negotiations using tone and language suitable to audience
Numeracy	1.1-1.5, 2.1, 2.3, 2.4	• Interprets numerical information to calculate all relevant financial information
Navigate the world of work	1.2, 1.4	• Appreciates implications of legal and regulatory responsibilities related to own work
Interact with others	1.7, 2.1	• Selects appropriate form, channel and mode of communication for a specific purpose relevant to own role
Get the work done	1.1, 1.2, 1.4-1.6, 2.2, 2.4	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer-term operational and strategic goals • Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of constraints into account • Uses formal and informal processes to monitor implementation of ideas and reflect on outcomes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBSMB406 Manage small business finances Release 2	BSBSMB406 Manage small business finances Release 1	Updated to clarify intent	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSMB406 Manage small business finances

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- operate the business according to the business plan, including:
  - adhering to legal requirements
  - meeting requirements of financial backers
  - defining strategies for debt collection and contingencies for debtors
  - managing cash flow
  - defining key performance indicators
  - communicating with relevant people
- monitor the business against financial plan and make changes as required.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss benchmarking
- explain financial decision-making relevant to the business
- summarise significant financial indicators
- outline purposes of financial reports
- clarify preparation and interpretation of budget/actual reports
- identify principles for preparing balance sheets and their interpretation
- outline debt collection procedures or strategies

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- characterise principles for preparing profit and loss statements and their interpretation
- discuss stock records and stock control relevant to the business.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the Management and Leadership – Small and Micro Business field of work and include access to:

- business equipment and resources
- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies or where possible, real situations
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSMB407 Manage a small team

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to select, induct, train and develop staff members to enhance business operations within the parameters of all relevant legislative requirements.

It applies to individuals who operate a small business that stands alone, or is part of a department within a larger organisation. Individuals in this role have a good knowledge of industrial relations and team management and use effective, responsive and supportive communication in workplace interactions.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Small and Micro Business

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop staffing plan	1.1 Determine staffing requirements to allow the business to run effectively, in accordance with requirements outlined in the

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ELEMENT	PERFORMANCE CRITERIA
	business plan 1.2 Identify and compare existing skills of owner/s and staff with business requirements to identify any gaps 1.3 Develop policies and procedures for owner/s and staff, in accordance with the business plan
2. Recruit, induct, train and retain team	2.1 Develop job or position descriptions, competencies required and selection criteria to meet business' needs 2.2 Judge information obtained from each candidate against specified selection criteria, and select according to business needs and legal requirements 2.3 Induct new staff members in accordance with policies and procedures of the business 2.4 Make team members aware of their responsibilities and performance requirements as soon as practicable, and take opportunities to coach team members who are unfamiliar with procedures of the business 2.5 Develop and implement a staff development program and career paths based on requirements of business and staff competencies 2.6 Advertise staff vacancies appropriately in accordance with staffing plan
3. Comply with industrial relations obligations	3.1 Clarify workplace rights and obligations of employers and employees, in accordance with legal requirements and codes of practice 3.2 Counsel staff, if required, in a positive and constructive manner and record outcomes accurately
4. Maintain staff records	4.1 Develop staff records system to provide timely and accurate information, in accordance with confidentiality, legal and taxation requirements 4.2 Monitor and accurately maintain system for recording and retrieving personnel and payroll information, and seek specialist advice where required
5. Manage staff	5.1 Regularly review contribution and skills of self and other team members to ensure performance is in line with agreed performance measures 5.2 Monitor and adjust staffing requirements to respond to any changes in tasks and functions required by the business 5.3 Support and encourage staff, and acknowledge and reward

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ELEMENT	PERFORMANCE CRITERIA
	their contribution 5.4 Regularly provide opportunities for staff to discuss work related issues 5.5 Develop contingency plans to cope with unexpected or extreme situations and take appropriate corrective action as required
6. Review team performance	6.1 Develop positive and constructive relationships with and between team members 6.2 Review and update team objectives in support of business goals on a regular basis in consultation with team members 6.3 Identify strengths and weaknesses of team against current and expected work requirements 6.4 Schedule time, on a regular basis, for team members to review work operations to maintain and improve operational efficiency 6.5 Encourage team members to monitor their own performance, suggest improvements and identify professional development needs, in accordance with personal and business requirements 6.6 Monitor and review staff turnover rate

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.2, 2.3, 2.5, 2.6, 3.1, 4.1, 5.1, 6.3, 6.5, 6.6	• Evaluates complex text to determine legislative, regulatory and workplace documentation
Writing	1.3, 2.1-2.6, 3.1, 3.2, 4.1, 4.2, 5.5, 6.1-6.3, 6.5	• Prepares written reports and workplace documentation that communicate complex information clearly and effectively
Oral Communication	1.2, 2.2-2.4, 3.1, 3.2, 4.2, 5.3, 5.4, 6.1, 6.2, 6.4, 6.5	• Articulates clearly using specific and relevant language suitable to audience to convey requirements, and employs listening and questioning techniques to confirm understanding • Participates in verbal negotiations and coaching using tone and language suitable to audience

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Numeracy	6.4	• Uses basic mathematical formulas to review staff performances within available work schedules
Navigate the world of work	1.3, 2.2. 3.1, 4.1	• Understands own legal rights and responsibilities and is extending understanding of general legal principles across work contexts • Monitors adherence to organisational policies and procedures and considers own role for its contribution to broader goals of the work environment
Interact with others	2.4, 2.6, 5.3, 6.1, 6.5	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction, influencing direction and taking a leadership role on occasion • Looks for ways of establishing connections and building genuine understanding with a diverse range of people • Actively identifies important communication exchanges, selecting appropriate channels, format, tone and context to suit purpose and audience, and monitors impact
Get the work done	1.1, 1.2, 2.2, 2.3, 2.5, 4.2, 5.1, 5.2, 5.5, 6.3, 6.6	• Uses digital technologies and systems safely, legally and ethically when gathering, storing, accessing and sharing information • Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer-term operational and strategic goals • Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of constraints into account • Uses formal and informal processes to monitor implementation of ideas and reflect on outcomes • Recognises and anticipates an increasing range of familiar problems, their symptoms and causes, actively looking for early warning signs and implementing contingency plans

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBSMB407 Manage a small team Release 2	BSBSMB407 Manage a small	Updated to clarify intent	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
	team Release 1		

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSMB407 Manage a small team

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use the business plan to:
  - determine staffing requirements
  - coordinate skill-gap training where required
  - develop human resource policies and procedures
- develop job descriptions and selection criteria
- determine induction processes
- implement staff development program
- adhere to legal requirements and codes of practice
- develop staff records system
- conduct ongoing performance measures
- communicate effectively with staff members
- develop contingency plans
- develop strategies to review team performance
- monitor and review staff.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss all government legislative requirements relating to staffing the business operation

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- explain work health and safety (WHS) responsibilities and procedures for managing hazards
- summarise relevant industry awards or enterprise agreements
- outline staff development pathways
- identify training course options for staff development
- summarise staff counselling, grievance and disciplinary procedures
- identify unfair dismissal legislation and procedures.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the Management and Leadership – Small and Micro Business field of work and include access to:

- business equipment and resources
- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies or where possible, real situations
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSTR401 Promote innovation in team environments

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to identify and implement ways of promoting innovation within team environments in the workplace.

The unit applies to individuals who are team participants or team leaders responsible for playing a proactive role in demonstrating innovation in a formal or informal team environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking and Problem Solving – Business Strategy

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify opportunities to maximise innovation	1.1 Identify team requirements relating innovation 1.2 Determine team dynamic and own relationship with team 1.3 Assist in evaluating team requirements according to workplace policies and procedures 1.4 Assist in identifying team's current ways of working according to team objectives 1.5 Assist in identifying opportunities in areas for innovation 1.6 Assist in creating processes that allow team members to suggest options for innovation and innovative ideas
2. Organise and agree on effective ways of	2.1 Identify ideas for ways of working better

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ELEMENT	PERFORMANCE CRITERIA
working	2.2 Delegate responsibilities across the team, and encourage and reinforce team-based innovation 2.3 Agree and share responsibilities and confirm best use of team strengths and abilities 2.4 Schedule activities that allow time for thinking, challenging and collaboration 2.5 Establish reward and stimulation as an integral part of the team's way of working
3. Support and guide colleagues to promote innovation	3.1 Demonstrate behaviour that supports innovation within team 3.2 Create an environment for staff to proactively share information, knowledge and experiences with other team members 3.3 Dedicate time with team members to challenge and test ideas 3.4 Discuss and explore innovation ideas with other team members
4. Evaluate innovation ideas and promotion	4.1 Identify criteria to review successful innovation in the workplace 4.2 Share innovation successes and examples of successful innovation within own workplace 4.3 Reflect on implemented innovation ideas 4.4 Seek and respond to feedback from relevant stakeholders to generate discussion and identify improvements in promoting innovation 4.5 Discuss with relevant stakeholders the challenges of being innovative 4.6 Document feedback received for improvements in promoting innovation for future activities

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets and analyses textual information, from a wide range of sources, to identify information relevant to team activities
Writing	• Uses clear language and formats appropriate for the audience to highlight and present specific information
Oral communication	• Actively participates in verbal exchanges of ideas and elicits the views and opinions of team members by listening and questioning • Uses clear language to clarify rules and roles relating to team

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SKILL	DESCRIPTION
	activities in formal and informal situations
Numeracy	• Interprets numeric information relevant to team activities
Planning and organising	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role
Teamwork	• Uses inclusive techniques to initiate, contribute and promote discussion amongst potentially diverse team members • Recognises the importance of establishing and building effective working relationships
Planning and organising	• Plans, sequences and prioritises tasks for efficient and effective outcomes
Problem solving	• Uses problem-solving processes to address less predictable problems, and when appropriate, seeking input from others • Contributes to continuous improvement of current work practices by applying basic principles of analytical and lateral thinking • Reflects on outcomes and further explores own and the team's role in implementing innovation
Initiative and enterprise	• Understands the nature and purpose of own role and how it affects others in the work context

Unit Mapping Information

No equivalent unit. Supersedes but is not equivalent to BSBINN301 Promote innovation in a team environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSTR401 Promote innovation in team environments

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- on at least two occasions assist a team to create an innovative team environment.

In the course of the above, the candidate must:

- encourage others to contribute to innovation
- identify ways of working
- implement and communicate improvements
- plan and schedule activities
- reflect on activities, feedback and challenges to identity improvement options
- model open and respectful communications
- contribute to the make-up and rules of the team.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- types of innovation and their benefits
- ways of working, including:
  - working hours
  - working spaces
  - agile working
- workplace policies and procedures
- internal and external factors that contribute to a team becoming and remaining innovative, including:
  - team characteristics
  - role of group dynamics and diversity
  - broader environmental factors

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- activities that can encourage and hinder innovation in a team, including:
  - allocation of time and activities
  - modelling behaviour
  - rewards and recognition
  - communications
  - feedback.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace equipment and resources relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSTR402 Implement continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to implement continuous improvement of systems and processes of an organisation. It includes using systems and strategies to encourage the team to participate in the process, monitoring and reviewing performance, and identifying opportunities for further improvements.

The unit applies to managers who are responsible for implementing the continuous improvement process to achieve the objectives of the organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking and Problem Solving – Business Strategy

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and plan for improvement	1.1 Identify relevant stakeholders and establish improvements required 1.2 Identify where new systems and processes could be implemented 1.3 Promote team involvement in decision making processes for team systems and processes 1.4 Communicate and agree on new improvement systems and processes with relevant stakeholders 1.5 Manage reports and recommendations for using systems and processes of the organisation

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ELEMENT	PERFORMANCE CRITERIA
	1.6 Establish risk review processes
2. Monitor implementation of continuous improvement	2.1 Use workplace systems and technology, and monitor team performance according to organisational policies and procedures 2.2 Implement new systems and processes in consultation with relevant stakeholders 2.3 Maintain new system and processes in consultation with relevant stakeholders 2.4 Identify and resolve system and process issues
3. Evaluate implementation of continuous improvement	3.1 Communicate productivity improvements to relevant stakeholders and confirm their understanding 3.2 Seek and respond to feedback from relevant stakeholders on proposed improvement systems and process 3.3 Review improvement systems and process, and make changes, as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Evaluates and integrates facts and ideas to construct meaning from a range of text types in order to implement continuous improvement systems and processes
Writing	• Selects vocabulary, grammatical structures and conventions appropriate to text • Researches, plans and prepares continuous improvement documentation for required stakeholders
Oral communication	• Participates in a variety of spoken exchanges with a range of audiences using structure and language to suit the audience
Initiative and enterprise	• Monitors adherence to organisational policies and procedures and considers own role in terms of its contribution to broader goals of the work environment • Recognises the potential of new approaches to enhance work practices and outcomes • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering required information and identifying and evaluating options against agreed criteria

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SKILL	DESCRIPTION
Teamwork	• Selects and uses required conventions and protocols when communicating with diverse individuals to seek and share information • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group communication, influencing direction and taking a leadership role on occasion
Self-management	• Evaluates effectiveness of decisions in terms of how well they meet stated goals
Technology	• Uses digital applications to access and filter data, extract, organise, integrate and share required information
Planning and organising	• Takes responsibility for planning and organising own workload to achieve required outcomes

Unit Mapping Information

Supersedes and is equivalent to BSBMGT403 Implement continuous improvement.

Supersedes but is not equivalent to:

- BSBCON401 Work effectively in a business continuity context
- BSBMGT406 Plan and monitor continuous improvement.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSTR402 Implement continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- implement at least one continuous improvement system or process in an organisation or work area.

In the course of the above, the candidate must:

- provide support to enable individuals and teams to participate in decisions, take responsibility, show initiative and implement improvement processes
- communicate effectively to support the implementation of improvements and improvement system and processes
- implement, monitor and update improvement plans, processes and procedures to improve performance
- document performance to identify further opportunities for improvement
- manage records and reports in the systems and procedures of the organisation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- continuous improvement systems and processes
- coaching and mentoring needs to support continuous improvement
- change management techniques that support continuous improvement and initiative
- organisation’s systems and data used for benchmarking and monitoring performance for continuous improvement.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- workplace documentation and resources relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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BSBTEC201 Use business software applications

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to select and use software and organise electronic information and data.

The unit applies to those who use a limited range of practical skills with a fundamental knowledge of equipment use and the organisation of data in a defined context, under direct supervision or with limited individual responsibility.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital Competence - Technology Use

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Select and prepare to use technology	1.1 Identify task purpose, audience, format and presentation requirements, and clarify with relevant personnel, where required 1.2 Select relevant technology and software applications to achieve requirements of the task 1.3 Adjust workspace, furniture and equipment to suit own ergonomic requirements
2. Input and process information or data	2.1 Identify and open application, according to task and organisational requirements 2.2 Enter information or data into application according to organisational requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Ensure information or data is checked and amended according to organisational and task requirements 2.4 Format information or data using appropriate application functions according to organisational and task requirements 2.5 Use relevant help functions to overcome simple issues
3. Finalise and store document	3.1 Review and edit final information or data, and prepare for storage in accordance with organisational and task requirements 3.2 Name and store document and exit application

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Recognises and interprets information from familiar sources to determine job role and task requirements
Writing	• Produces and amends files to meet task and organisational requirements • Completes required documentation using organisational formats

Unit Mapping Information

Supersedes and is equivalent to:

- BSBITU211 Produce digital text documents
- BSBITU212 Create and use spreadsheets
- BSBWOR204 Use business technology.

Supersedes but is not equivalent to BSBCUE301 Use multiple information systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBTEC201 Use business software applications

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- select and use at least three business software applications on two occasions each.

In the course of the above, the candidate must:

- select and use technology safely and according to organisational requirements
- identify and address faults according to requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key features of:
  - organisation's work health and safety requirements relevant to own role
  - organisation's requirements for file naming and storage
  - applications used for organising electronic information and data.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace equipment and resources
- electronic files, information and data
- workplace documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBTWK401 Build and maintain business relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to establish, develop and maintain effective work relationships and networks through relationship building and negotiation skills required by workers. These workers may be within an organisation as well as freelance or contract workers.

The unit applies to individuals with a broad knowledge of networking and negotiation who contribute to creating solutions to unpredictable problems. They may have responsibility for and provide guidance to others.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Social Competence – Teamwork and Relationships

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish business relationships	1.1 Identify business development and networking objectives of the organisation and own role 1.2 Determine networking opportunities according to identified objectives and organisational policies and procedures 1.3 Confirm communication channels for information exchange with business contacts 1.4 Engage with business contacts using written and verbal communication to promote business opportunities
2. Maintain business	2.1 Use communication techniques to establish rapport with

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ELEMENT	PERFORMANCE CRITERIA
relationships	business contacts 2.2 Identify barriers to business development opportunities 2.3 Use problem-solving techniques to negotiate solutions to identified situations 2.4 Seek specialist advice in the development of contacts, as required
3. Build and improve business relationships	3.1 Develop strategies to represent and promote organisational interests to contacts 3.2 Participate in formal and informal networks that promote the organisation 3.3 Communicate issues regarding relationships in writing and verbally to organisational personnel 3.4 Seek and respond to feedback from management on the quality of relationships with business contacts

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Seeks opportunities to develop and extend expertise and identify areas for professional improvement
Reading	• Sources and analyses information to establish networks that consistently promotes business opportunities
Writing	• Uses appropriate vocabulary, layout and grammatical structure to convey ideas and information
Oral Communication	• Uses persuasive language and appropriate non-verbal features to achieve mutually acceptable outcomes • Uses active listening and questioning techniques to confirm understanding
Initiative and enterprise	• Identifies and adheres to organisational policies and procedures
Teamwork	• Looks for ways to establish connections and build genuine understanding with a diverse range of people • Cultivates relationships with people with the knowledge, skills and influence to get things done or provide support

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SKILL	DESCRIPTION
Planning and organising	• Takes responsibility for planning, sequencing and implementing tasks required to build and maintain networks • Uses analytical processes to identify problems, gather relevant information, evaluate options and determine solutions

Unit Mapping Information

Supersedes and is equivalent to BSBREL401 Establish networks.

Supersedes but is not equivalent to:

- BSBREL402 Build client relationships and business networks
- BSBREL403 Implement international client relationship strategies
- BSBSMB411 Manage specialist external advisory services.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBTWK401 Build and maintain business relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- communicate with others to build and maintain at least two different business relationships.

In the course of the above, the candidate must:

- promote professional business relationship using written and verbal communication techniques
- identify methods to improve business relationships
- participate in formal and informal networking opportunities that promote the business.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- strategies for establishing and maintaining business relationships
- methods of engaging with business contacts including through participation in professional networks and associations
- relevant networks, organisations, agencies, associations or individuals
- principles and techniques needed to negotiate positive outcomes
- organisational policies, plans and procedures relevant to business relationships
- methods for obtaining feedback on business relationships.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace documentation and resources

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- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWHS311 Assist with maintaining workplace safety

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to assist with implementing and monitoring an organisation's work health and safety (WHS) policies, procedures and programs as part of a small work team.

The unit applies to individuals who have roles in assisting with maintaining workplace safety in an organisation. Individuals closely monitor aspects of work associated with the safe delivery of products and services, and they contribute to influencing safety in the workplace.

NOTES

1. The terms 'occupational health and safety' (OHS) and 'work health and safety' (WHS) are equivalent, and generally either can be used in the workplace. In jurisdictions where *model WHS laws* have not been implemented, registered training organisations (RTOs) are advised to contextualise this unit of competency by referring to existing WHS legislative requirements.

2. The *model WHS laws* include the model WHS Act, model WHS Regulations and model WHS Codes of Practice. See Safe Work Australia for further information.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Regulation, Licensing and Risk – Work Health and Safety

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the	*Performance criteria describe the performance needed to*

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ELEMENT	**PERFORMANCE CRITERIA**
essential outcomes.	*demonstrate achievement of the element.*
1. Assist with incorporating WHS policies and procedures into work team processes	1.1 Identify health and safety requirements of work team according to applicable WHS laws 1.2 Assist with explaining organisational WHS policies, procedures, programs and legislative requirements to required personnel 1.3 Assist with explaining hazard identification and risk assessment outcomes to required personnel
2. Contribute to consultative arrangements for managing WHS	2.1 Assist with implementing consultative processes designed to engage work team in managing WHS 2.2 Respond to WHS issues in a timely manner and according to organisational policies and procedures for issue resolution 2.3 Encourage others to participate in arrangements for managing WHS 2.4 Assist in engaging with required personnel to identify and implement improvements in response to WHS feedback
3. Contribute to organisational procedures for providing WHS training	3.1 Identify WHS training needs of the work team and report to relevant stakeholders 3.2 Identify strategies and opportunities for developing work team's WHS competence and report to relevant stakeholders 3.3 Provide assistance to work team members to support the effective development of their WHS competence
4. Participate in identifying hazards, and assessing and controlling risks for the work area	4.1 Identify hazards in the work area and report to relevant stakeholders according to organisational policies and procedures, and WHS legislative requirements 4.2 Assist with implementing processes designed to control risks using the hierarchy of control measures according to organisational procedures and WHS legislative requirements 4.3 Identify and document inadequacies in existing risk control measures according to organisational policies and procedures, the hierarchy of control measures and WHS legislative requirements 4.4 Report inadequacies in existing risk control measures to relevant stakeholders 4.5 Complete and maintain WHS incident records in the work area according to organisational procedures and WHS legislative requirements

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	• Interprets WHS legislative and organisational documentation • Applies appropriate strategies to construct meaning from WHS legislative and organisational documentation
Writing	• Documents WHS information using required format and industry specific vocabulary
Oral communication	• Presents information using language and non-verbal communication appropriate to audience and context • Uses questioning and active listening to confirm understanding
Navigate the world of work	• Follows WHS policies, procedures and legislative requirements relevant to own role • Keeps up to date with changes to WHS laws relevant to own role
Interact with others	• Selects appropriate communication protocols and conventions to provide information to others • Collaborates with others to achieve joint outcomes • Plays an active role in facilitating effective group interaction, influencing direction and taking a leadership role on occasion • Provides feedback to others in forms with which they can engage and respond
Get the work done	• Sequences and schedules activities, monitors implementation and manages relevant communication • Initiates standard procedures when responding to issues raised through consultation • Uses feedback to participate in the identification and implementation of opportunities to improve arrangements for managing WHS issues

Unit Mapping Information

Supersedes and is equivalent to BSBWHS301 Maintain workplace safety.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWHS311 Assist with maintaining workplace safety

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- assist with implementing and monitoring at least three different organisational work health and safety (WHS) policies or procedures into a work team's processes.

During the above, the candidate must:

- assist with implementing and monitoring consultation about each policy or procedure according to legislative and organisational requirements
- identify opportunities to encourage work team to contribute to implementing improvements to each policy or procedure based on feedback received through consultation
- complete WHS documentation.

Knowledge Evidence

The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- characteristics and composition of the work team
- procedures related to the following:
  - identifying hazards
  - assessing and controlling risks to health and safety, including the hierarchy of control measures
- organisational WHS policies and procedures, including those relating to:
  - risk management
  - fire
  - emergencies
  - evacuation
  - incident investigation

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    - reporting
- relevant legislation, regulations and codes of practice from all levels of government that impact on business operations, including those relating to:
    - WHS and environmental issues
    - equal opportunity
    - industrial relations
    - anti-discrimination
- WHS aspects of other organisational systems and procedures.

Assessment Conditions

Assessment must comply with WHS laws, and WHS legal responsibilities and duty of care required for this unit. It must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities undertaken by individuals carrying out WHS duties in the workplace, and include access to:

- safety processes relevant to the area of work
- organisational policies and procedures, standard operating procedures and plans
- standards, WHS laws and licensing requirements
- opportunities for interaction with others
- workplace equipment and resources required for the performance evidence.

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWHS332X Apply infection prevention and control procedures to own work activities

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 6.1.

Application

This unit describes the skills and knowledge required to undertake work activities in compliance with organisational procedures that prevent and control infection. It involves implementing standard and transmission-based precautions, identifying infection hazards, and assessing and responding to infection risks.

The unit applies to all workers required to undertake their activities in compliance with the infection prevention and control procedures in place in their workplace.

The skills in this unit must be applied in accordance with Commonwealth and State/Territory legislation, Australian/New Zealand standards and industry codes of practice.

Unit Sector

Cross-Sector – Infection Prevention and Control

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to undertake work activities in a manner that supports infection prevention and control	1.1 Identify job requirements 1.2 Identify organisational infection prevention and control procedures relating to identified job requirements 1.3 Identify infection hazards associated with work activities and environment and assess the risk

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ELEMENT	PERFORMANCE CRITERIA
	according to organisational procedures 1.4 Identify and implement infection prevention and control measures relating to identified hazards within scope of own role and responsibilities and according to organisational procedures
2. Undertake work activities in a manner that supports infection prevention and control	2.1 Use resources and equipment according to organisational infection prevention and control procedures and manufacturer specifications 2.2 Clean and maintain own work area according to organisational infection prevention and control procedures 2.3 Respond to infection prevention and control hazards and non-compliance arising in the course of activities, within scope of own role or escalate to required personnel 2.4 Respond to exposure to infection of self or others according to organisational procedures and within required timeframes
3. Finalise work activities according to organisational infection prevention and control requirements	3.1 Maintain and store resources and equipment used in the course of own activities according to organisational infection prevention and control procedures and manufacturer specifications 3.2 Dispose of waste and confine contaminated resources or equipment according to organisational infection prevention and control procedures 3.3 Complete incident reports and convey to required personnel according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Oral communication	• Explains an infection hazard or non-compliance to required personnel, using suitable words and terms and responding clearly to specific enquiries • Listens to and interprets information relevant to own role in relation to infection prevention and control

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Skill	Description
Reading	• Interprets information in a range of workplace procedures essential to infection prevention and control in own role
Writing	• Records easy-to-read information relating to workplace hazards and incidents, using words and terms appropriate to audience and purpose
Initiative and enterprise	• Identifies both obvious and less evident hazards to self and others
Problem solving	• Identifies and applies infection prevention and control measures suited to own role and work environment

Unit Mapping Information

No equivalent unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWHS332X Apply infection prevention and control procedures to own work activities

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 6.1.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- apply organisational infection prevention and control procedures to own work activities on at least three different occasions
- identify at least two different infection hazards, assess the risk they pose, and respond to each within scope of own role and responsibilities and according to organisational infection prevention and control procedures.

In the course of the above, the candidate must:

- demonstrate the use of required precautions and control measures, as required for own work activities
- confine at least one resource or piece of equipment that is suspected of being contaminated, according to organisational infection prevention and control procedures
- dispose of waste according to organisational infection prevention and control procedures.
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- nature and types of infection-related hazards in own work environment
- chain of infection:
  - source of infectious agent
  - mode of transmission
  - susceptible host and factors that increase susceptibility
- key modes of disease transmission – contact, airborne and droplet:
  - paths of transmission, including direct contact, aerosols and penetrating injuries

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  - risk of acquisition
  - sources of infecting microorganisms, including persons who are carriers, in the incubation phase of the disease or those who are acutely ill
- precautions and control measures for infection hazards associated with own role and work activities, including standard and transmission-based precautions:
  - required personal health and hygiene, including:
    - checking and reporting indicators of own ill health
    - respiratory hygiene and cough etiquette
    - hand hygiene: procedures for hand washing and hand rubbing; and situations requiring the use of soap and water or alcohol-based hand rub
    - guidelines on maintaining fingernails and intact skin
    - guidelines on wearing jewellery and watches
    - social distancing measures
- organisational procedures relating to own role and work activities, including for:
  - identifying hazards associated with own work activities and workplace environment, including infection-related hazards
  - assessing risks associated with identified hazards, including determining the likelihood and severity of harm
  - reporting hazards that put self and others at risk, including infection hazards
  - identifying, sourcing and checking the serviceability of PPE required in own role and work activities:
    - eye protection: protective glasses or goggles
    - gloves
    - masks or face shields
    - protective clothing and footwear
  - completing incident reports
- organisational infection prevention and control procedures relating to own role, work activities and physical environment, including for:
  - escalating hazard prevention and control matters outside scope of own role
  - handling, transporting, reprocessing or processing resources and equipment used in the course of own work activities in a manner that:
    - prevents skin and mucous membrane exposure, contamination and transfer of pathogens
    - limits contamination of resources and equipment
    - controls the spread of infection
  - handling and disposing of waste relating to own work activities, including contaminated waste
  - environmental cleaning of own work area, including cleaning and disinfecting surfaces: procedures and specified schedules
  - confining contaminated resources and equipment to designated areas
  - confining workplace records and materials to clean areas
  - responding to exposure to infection of self or others, including to body fluids

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- infection prevention and control protocols required by own work activities:
  - placing appropriate signs when and where appropriate
  - removing spills
  - separating and maintaining clean and contaminated areas
- manufacturer specifications relating to resources and equipment used and maintained in the course of own work activities.
-

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- suitable facilities, equipment and resources, including:
  - organisational infection prevention and control procedures and guidelines
  - PPE suited to work role and job requirements
  - hygiene facilities and equipment relevant to workplace
  - waste disposal equipment suited to waste generated during work activities
  - areas for cleaning.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWHS401 Implement and monitor WHS policies, procedures and programs to meet legislative requirements

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package release 1.0

Application

This unit describes the skills and knowledge required to implement and monitor an organisation's work health and safety (WHS) policies, procedures and programs in the relevant work area in order to meet legislative requirements.

It applies to individuals with supervisory responsibilities for implementing and monitoring the organisation's WHS policies, procedures and programs in a work area. These individuals have a broad knowledge of WHS policies and contribute well developed skills in creating solutions to unpredictable problems through analysis and evaluation of information from a variety of sources. They provide supervision and guidance to others and have limited responsibility for the output of others.

NOTE: The terms 'occupational health and safety' (OHS) and 'work health and safety' (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Regulation, Licensing and Risk – Work Health and Safety

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the	*Performance criteria describe the performance needed to*

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ELEMENT	PERFORMANCE CRITERIA
essential outcomes.	*demonstrate achievement of the element.*
1. Provide information to the work team about WHS policies and procedures	1.1 Accurately explain to the work team relevant provisions of WHS Acts, regulations and codes of practice 1.2 Provide information about the organisation's WHS policies, procedures and programs, and ensure it is readily accessible to, and understandable by the work team 1.3 Regularly provide and clearly explain to the work team information about identified hazards and the outcomes of risk assessment and control
2. Implement and monitor participation arrangements for managing WHS	2.1 Communicate to workplace parties the importance of effective consultation mechanisms in managing health and safety risks in the workplace 2.2 Apply consultation procedures to facilitate participation of the work team in managing work area hazards 2.3 Promptly deal with issues raised through consultation, according to organisational consultation procedures and WHS legislative and regulatory requirements 2.4 Promptly record and communicate to the work team the outcomes of consultation over WHS issues
3. Implement and monitor organisational procedures for providing WHS training	3.1 Identify WHS training needs according to organisational requirements and WHS legislative and regulatory requirements 3.2 Make arrangements to meet WHS training needs of team members in consultation with relevant individuals 3.3 Provide workplace learning opportunities and coaching and mentoring assistance to facilitate team and individual achievement of identified WHS training needs 3.4 Identify and report to management the costs associated with providing training for work team, for inclusion in financial and management plans
4. Implement and monitor organisational procedures and legal requirements for identifying hazards and assessing and controlling risks	4.1 Identify and report on hazards in work area according to WHS policies and procedures and WHS legislative and regulatory requirements 4.2 Promptly action team member hazard reports according to organisational procedures and WHS legislative and regulatory requirements 4.3 Implement procedures to control risks using the hierarchy of control, according to organisational and WHS legislative requirements

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ELEMENT	PERFORMANCE CRITERIA
	4.4 Identify and report inadequacies in existing risk controls according to hierarchy of control and WHS legislative requirements 4.5 Monitor outcomes of reports on inadequacies, where appropriate, to ensure a prompt organisational response
5. Implement and monitor organisational procedures for maintaining WHS records for the team	5.1 Accurately complete and maintain WHS records of incidents of occupational injury and disease in work area, according to WHS policies, procedures and legislative requirements 5.2 Use aggregate information and data from work area records to identify hazards and monitor risk control procedures in work area

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 5.2	• Interprets and analyses complex WHS legislative and organisational texts
Writing	1.1-1.3, 2.3, 2.4, 3.1, 3.2, 3.4, 4.1, 4.4, 5.1	• Documents WHS legislative and organisational information using structure, layout and language suitable for audience • Records WHS issues and actions taken according to reporting requirements • Prepares and maintains required records using appropriate structure and vocabulary
Oral communication	1.1-1.3, 2.1, 2.4, 3.2, 3.3, 4.1, 4.4	• Provides WHS legislative and organisational information and advice using structure and language suitable for audience
Numeracy	3.4, 5.2	• Extracts, interprets and comprehends mathematical information in relation to training costs and risk management data
Navigate the world of work	1.1,1.2, 2.3, 3.1, 4.1-4.5, 5.1	• Takes responsibility for adherence to legal and regulatory responsibilities and organisational policies and procedures in relation to WHS • Keeps up to date on changes to WHS legislation or regulations and organisational policies and procedures
Interact with	2.2, 3.2, 3.3	• Selects and uses appropriate conventions and protocols to facilitate consultation or provide feedback

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others		• Initiates and contributes to facilitating consultative role, responding, explaining, clarifying and expanding on ideas and information as required • Collaborates with others to achieve individual and team outcomes
Get the work done	2.2, 3.2, 3.3, 4.1-4.5, 5.1	• Uses combination of formal, logical planning and intuitive understanding of context to identify relevant information and risks, and identify and evaluate alternative strategies • Uses formal decision-making processes, setting or clarifying goals, gathering information and identifying and evaluating choices against a set of criteria • Recognises and takes responsibility for reporting WHS risk control inadequacies • Uses formal and informal processes to monitor implementations of WHS solutions and reflect on outcomes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBWHS401 Implement and monitor WHS policies, procedures and programs to meet legislative requirements	BSBWHS401A Implement and monitor WHS policies, procedures and programs to meet legislative requirements	Updated to meet Standards for Training Packages Minor edits to clarify intent of performance criteria	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWHS401 Implement and monitor WHS policies, procedures and programs to meet legislative requirements

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- explain clearly and accurately to work team the relevant work health and safety (WHS) information including:
  - WHS legislative and organisational requirements
  - identified hazards and outcomes of risk assessment and control
- ensure that the team has access to information about WHS policies, procedures and programs in appropriate structure and language
- implement and monitor procedures according to organisational and legislative WHS requirements including:
  - consultation and communications to enable team members to participate in managing WHS risks and hazards
  - identifying WHS training needs and providing learning opportunities, coaching and mentoring as appropriate to needs
  - identifying, reporting and taking action on WHS hazards and risks
  - identifying and reporting inadequacies in existing risk controls and monitoring outcomes to ensure a prompt organisational response
  - reporting on the cost of WHS training
  - keeping WHS records
  - analysing aggregate WHS data to identify hazards and monitor risk control procedures in work area.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

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Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the legal responsibilities and duties of managers, supervisors, persons conducting businesses or undertakings (PCBUs) and workers in relation to WHS risk management in the workplace
- identify key provisions of relevant WHS Acts, regulations and codes of practice that apply to the business and outline how they apply in the work area
- explain organisational policies and procedures relating to hazard identification, risk management, fire, emergency and evacuation, incident investigation and reporting
- explain the importance of effective consultation mechanisms in managing health and safety risks in the workplace
- explain how the hierarchy of control applies in the work area.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced by individuals carrying out work health and safety duties in the workplace and include access to:

- an actual workplace or simulated environment
- workplace equipment and resources
- examples of documents relating to workplace safety, hazard identification and risk assessment
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWHS411 Implement and monitor WHS policies, procedures and programs

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to implement and monitor an organisation's work health and safety (WHS) policies, procedures and programs in the relevant work area in order to meet legislative requirements.

The unit applies to those with supervisory responsibilities in a work area who have a broad knowledge of WHS policies and contribute well-developed skills in creating solutions to problems through analysis and evaluation of information from a variety of sources. They provide supervision and guidance to others and have limited responsibility for the output of others.

NOTES

1. The terms 'occupational health and safety' (OHS) and 'work health and safety' (WHS) are equivalent, and generally either can be used in the workplace. In jurisdictions where *model WHS laws* have not been implemented, registered training organisations (RTOs) are advised to contextualise this unit of competency by referring to existing WHS legislative requirements.

2. The *model WHS laws* include the model WHS Act, model WHS Regulations and model WHS Codes of Practice. See Safe Work Australia for further information.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Regulation, Licensing and Risk – Work Health and Safety

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Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Provide information to work team about WHS policies and procedures	1.1 Identify and communicate relevant provisions about WHS laws to work team 1.2 Provide information about organisation's WHS policies, procedures and programs, and ensure it is readily accessible to work team 1.3 Communicate information about identified hazards and outcomes of risk assessment and control to work team
2. Implement and monitor work team consultative arrangements for managing WHS	2.1 Communicate importance of consultation mechanisms in managing WHS risks to work team 2.2 Apply consultation mechanisms to facilitate work team participation in managing work area hazards, according to organisational policies and procedures 2.3 Contribute to managing issues raised through consultation mechanisms, according to organisational consultation procedures and WHS legislative requirements 2.4 Communicate outcomes of consultation about WHS issues to work team
3. Implement and monitor organisational procedures for providing WHS training to work team	3.1 Identify and document team WHS training needs according to organisational requirements and WHS laws 3.2 Make arrangements to meet WHS training needs of team members in consultation with relevant stakeholders 3.3 Provide workplace learning opportunities to facilitate team and individual achievement of identified WHS training needs
4. Implement and monitor organisational procedures and legal requirements for identifying hazards, and assessing and controlling risks	4.1 Identify and report on hazards in work area according to organisational policies and procedures, and WHS legislative requirements 4.2 Contribute to managing and implementing hazard reports according to organisational policies and procedures, and WHS legislative requirements 4.3 Implement procedures to control risks using the hierarchy of control measures according to organisational policies and procedures, and WHS legislative requirements 4.4 Identify and report inadequacies in existing risk controls according to the hierarchy of control measures, and WHS legislative requirements 4.5 Monitor outcomes of reports on inadequacies, as required, to ensure prompt organisational response

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ELEMENTS	PERFORMANCE CRITERIA
5. Implement and monitor organisational procedures for maintaining WHS records	5.1 Complete and maintain WHS incident records of occupational injury and disease in work area according to organisational policies and procedures, and WHS legislative requirements 5.2 Use aggregate information and data from work area records to meet organisational recordkeeping requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets and analyses WHS laws and organisational texts
Writing	• Documents organisational WHS policies, procedures and programs according to WHS laws, using structure, layout and language suitable for audience • Records WHS issues and actions taken according to reporting requirements • Prepares and maintains required records using appropriate structure and vocabulary
Oral communication	• Provides WHS organisational information and advice using structure and language suitable for audience • Uses questioning and active listening to clarify understanding
Navigate the world of work	• Adheres to legal and regulatory responsibilities, and organisational policies and procedures in relation to own WHS role and responsibilities • Keeps up to date on changes to WHS laws, and related organisational policies and procedures relevant to own role
Interact with others	• Selects and uses appropriate conventions and protocols to facilitate consultation and provide feedback • Initiates and contributes to facilitating consultative role: responding, explaining, clarifying and expanding on ideas and information as required • Collaborates with others to achieve individual team member and team outcomes
Get the work done	• Uses combination of logical planning and intuitive understanding of context to identify relevant information and risks, and to identify and evaluate alternative strategies • Uses decision-making processes: sets and clarifies goals, gathers

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Skill	Description
	information, and identifies and evaluates choices against a set of criteria • Takes responsibility for reporting WHS risk control inadequacies • Uses processes to monitor implementation of WHS organisational procedures

Unit Mapping Information

Supersedes and is equivalent to BSBWHS401 Implement and monitor WHS policies, procedures and programs to meet legislative requirements.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWHS411 Implement and monitor WHS policies, procedures and programs

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- implement and monitor the work health and safety (WHS) policies, procedures and programs for one work area in an organisation.

During the above, the candidate must:

- explain relevant WHS information clearly and accurately to work team
- provide work team with access to WHS policies, procedures and programs in appropriate structure and language
- implement and monitor procedures, according to WHS legislative and organisational requirements, for:
  - consultation on and communication about WHS hazards and risks
  - WHS training needs and learning opportunities
  - WHS records
  - using WHS aggregate data relating to hazards and risk control.

Knowledge Evidence

The candidate must demonstrate the knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- key provisions of commonwealth and state/territory WHS laws that apply to the business, and procedures for their application in the work area
- organisational policies and procedures for:
  - consulting during WHS issue management
  - identifying hazards and managing risks, including using aggregate information and work area data
  - incident response, investigation and reporting

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- legal responsibilities and duties of managers, supervisors, persons conducting a business or undertaking (PCBUs) and workers in relation to WHS risk management in the workplace
- procedures for assessing implications of near misses in relation to incidents, injuries and illnesses in the work area
- effective consultation mechanisms in managing health and safety risks in the workplace
- features of effective workplace learning opportunities, including coaching and mentoring assistance that facilitates team and individual achievement of WHS training needs
- key principles and components of the hierarchy of control measures
- procedures for applying the hierarchy of control measures in own work area.

Assessment Conditions

Assessment must comply with WHS laws, legal responsibilities and duty of care required for this unit. It must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities undertaken by individuals carrying out WHS duties in the workplace, and must include access to:

- actual workplace or simulated environment
- workplace equipment and resources
- examples of documents about workplace safety, hazard identification and risk assessment
- WHS laws and organisational documentation required to demonstrate the performance evidence
- opportunities for interaction with others.

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWHS501 Ensure a safe workplace

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to establish, maintain and evaluate the organisation's work health and safety (WHS) policies, procedures and programs in the relevant work area, according to WHS legislative requirements. It takes a systems approach and addresses compliance with relevant legislative requirements.

This unit applies to managers working in a range of contexts who have, or are likely to have responsibility for WHS as part of their broader management role. It is relevant for people with obligations under WHS legislation, for example persons conducting a business or undertaking (PCBUs) or officers, as defined by relevant legislation.

NOTE: The terms 'occupational health and safety' (OHS) and 'work health and safety' (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Regulation, Licensing and Risk – Work Health and Safety

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENT	PERFORMANCE CRITERIA
1 Establish a WHS management system in a work area	1.1 Locate, adapt, adopt and communicate WHS policies that clearly define the organisation's commitment to complying with WHS legislation 1.2 Identify duty holders and define WHS responsibilities for all workplace personnel in the work area according to WHS legislation, policies, procedures and programs 1.3 Identify and approve financial and human resources required by the WHS management system (WHSMS)
2 Establish and maintain effective and compliant participation arrangements for managing WHS in a work area	2.1 Work with workers and their representatives to set up and maintain participation arrangements according to relevant WHS legislation 2.2 Appropriately resolve issues raised through participation and consultation arrangements according to relevant WHS legislation 2.3 Promptly provide information about the outcomes of participation and consultation to workers and ensure it is easy for them to access and understand
3 Establish and maintain procedures for effectively identifying hazards, and assessing and controlling risks in a work area	3.1 Develop procedures for ongoing hazard identification, and assessment and control of associated risks 3.2 Include hazard identification at the planning, design and evaluation stages of any change in the workplace to ensure that new hazards are not created by the proposed changes and existing hazards are controlled 3.3 Develop and maintain procedures for selecting and implementing risk controls according to the hierarchy of control and WHS legislative requirements 3.4 Identify inadequacies in existing risk controls according to the hierarchy of control and WHS legislative requirements, and promptly provide resources to enable implementation of new measures 3.5 Identify requirements for expert WHS advice, and request this advice as required
4 Evaluate and maintain a work area WHS management system	4.1 Develop and provide a WHS induction and training program for all workers in a work area as part of the organisation's training program 4.2 Use a system for WHS record keeping to allow identification of patterns of occupational injury and disease in the organisation, and to maintain a record of WHS decisions made, including reasons for the decision 4.3 Measure and evaluate the WHSMS in line with the

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ELEMENT	PERFORMANCE CRITERIA
	organisation's quality systems framework 4.4 Develop and implement improvements to the WHSMS to achieve organisational WHS objectives 4.5 Ensure compliance with the WHS legislative framework to achieve, as a minimum, WHS legal requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 4.2, 4.3, 4.5	• Organises, evaluates and critiques ideas and information from WHS legislation, policies, procedures and programs
Writing	1.1, 2.3, 3.2, 3.5, 4.1, 4.2	• Produces WHS policies, procedures and programs • using appropriate vocabulary, grammatical structure and conventions to produce • Records WHS decisions according to organisational requirements
Oral communication	1.1, 2.1, 2.2, 2.3	• Presents and seeks information from others using structure and language suitable for the audience • Provides information on resolution of WHS issues varying level of technical vocabulary to suit audience
Numeracy	1.3	• Selects from, and applies, an expanding range of mathematical and problem solving strategies in identifying financial and human resources required
Navigate the world of work	1.1, 1.2, 2.1, 2.2, 3.3, 3.4, 4.5	• Monitors adherence to legal and regulatory rights and responsibilities for self and others in relation to WHS • Takes responsibility for developing, implementing and reviewing policies, procedures and processes in accordance with organisational and legislative requirements
Interact with others	1.1, 2.1, 2.3, 3.5	• Plays a lead role in situations requiring effective collaboration demonstrating the ability to guide discussions and negotiate agreeable outcomes • Provides feedback to others in forms they can

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		understand and use
Get the work done	1.1, 1.3, 2.1, 2.2, 2.3, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2 4.3, 4.4, 4.5	• Develops plans or processes to manage relatively complex, WHS management tasks with an awareness of how they contribute to operational and strategic goals • Uses systematic, analytical processes, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Considers whether, and how, others should be involved, using consultative or collaborative processes as an integral part of the decision-making process • Uses digital systems and tools to enter, store and retrieve relevant information

Range of Conditions

This section specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

WHS legislation must include:	• applicable Commonwealth and state or territory WHS Acts, regulations and codes of practice.

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBWHS501 Ensure a safe workplace	BSBWHS501A Ensure a safe workplace	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWHS501 Ensure a safe workplace

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- establish, implement, maintain and evaluate a work health and safety (WHS) management system for a work area of an organisation in accordance with WHS legislation including policies, procedures and record keeping
- ensure organisational WHS compliance
- establish, implement, maintain and evaluate effective and compliant participation arrangements for managing WHS including identifying duty holders, identifying and approving the required resources and developing and implementing a training program
- establish, implement, maintain and evaluate procedures for effectively identifying hazards, and assessing and controlling risks using the hierarchy of risk control
- provide information and complete documentation for a WHS management system
- identify requirements for and request expert WHS advice.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and detail relevant WHS Acts, regulations and codes of practice
- specify relevant WHS organisational policies, procedures, programs and practices
- explain hazard identification and risk-management processes
- describe the hierarchy of risk control and how it is applied in the workplace
- specify in-house and WHS legislative reporting requirements.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced by individuals carrying out work health and safety duties in the workplace and include access to:

- organisational WHS policies and procedures
- WHS legislation, regulations and codes of practice
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWOR204 Use business technology

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to select and use computer software and organise electronic information and data.

It applies to individuals who apply a limited range of practical skills with a fundamental knowledge of equipment use and the organisation of data in a defined context, under direct supervision or with limited individual responsibility.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Industry Capability – Workplace Effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Select and use technology	1.1 Select appropriate technology and software applications to achieve requirements of the task 1.2 Adjust workspace, furniture and equipment to suit user's ergonomic requirements 1.3 Use technology according to organisational requirements and in a way that promotes a safe work environment
2. Process and organise	2.1 Identify, open, generate or amend files and records according

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ELEMENT	PERFORMANCE CRITERIA
data	to task and organisational requirements 2.2 Operate input devices according to organisational requirements 2.3 Store data appropriately and exit applications without damage to or loss of, data 2.4 Use manuals, training booklets and/or online help or helpdesks to overcome basic difficulties with applications
3. Maintain technology	3.1 Identify and replace used technology consumables in accordance with manufacturer's instructions and organisational requirements 3.2 Carry out and/or arrange routine maintenance to ensure equipment is maintained in accordance with manufacturer's instructions and organisational requirements 3.3 Identify equipment faults accurately and take action in accordance with manufacturer's instructions or report fault to designated person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.3, 2.1, 2.2, 2.4, 3.1-3.3	• Recognises and interprets information from familiar sources to determine job role and task requirements
Writing	2.1, 2.3, 3.2, 3.3	• Produces and amends files to meet task and organisational requirements • Completes required documentation using organisational formats
Oral Communication	3.3	• Uses specific and relevant language to refer faults to others
Navigate the world of work	1.2, 1.3, 2.1, 2.2, 3.1-3.3	• Recognises and follows legislative requirements and organisational policies and procedures associated with own role
Get the work done	1.1, 1.3, 2.1-2.4, 3.1-3.3	• Uses business technologies and systems safely, when gathering, storing, accessing and sharing information • Understands purposes, specific functions and key

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		features of common digital systems and business tools • Operates digital systems and business tools effectively to complete routine tasks using some basic troubleshooting strategies as required

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBWOR204 Use business technology	BSBWOR204A Use business technology	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWOR204 Use business technology

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- select and use technology safely and according to organisational requirements
- access, retrieve and store required data
- demonstrate basic maintenance on a range of equipment using manuals or help-files
- identify and address faults according to requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the organisation's work health and safety requirements
- outline the organisation's requirements for file naming and storage
- explain why regular back-ups of data are done
- list 'routine maintenance' tasks
- summarise the procedure for addressing equipment faults.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the industry capability – workplace effectiveness field of work and include access to:

- office equipment and resources
- electronic files and data
- workplace documentation and equipment manuals
- case studies and, where possible, real situations

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- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWOR404 Develop work priorities

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.1. Version created to correct mapping table information
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to monitor and obtain feedback on own work performance and access learning opportunities for professional development.

This unit applies to individuals who are required to design their own work schedules and work plans and to establish priorities for their work. They will typically hold some responsibilities for the work of others and have some autonomy in relation to their own role.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Industry Capability – Workplace Effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and complete own work schedule	1.1 Prepare workgroup plans which reflect consideration of resources, client needs and workgroup targets 1.2 Analyse and incorporate work objectives and priorities into personal schedules and responsibilities

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Identify factors affecting the achievement of work objectives and establish contingencies and incorporate them into work plans 1.4 Efficiently and effectively use business technology to manage and monitor planning completion and scheduling of tasks
2. Monitor own work performance	2.1 Identify and analyse personal performance through self-assessment and feedback from others on the achievement of work objectives 2.2 Seek and evaluate feedback on performance from colleagues and clients in the context of individual and group requirements 2.3 Routinely identify and report on variations in the quality of service and performance in accordance with organisational requirements
3. Co-ordinate professional development	3.1 Assess personal knowledge and skills against organisational benchmarks to determine development needs and priorities 3.2 Research and identify sources and plan for opportunities for improvement in consultation with colleagues 3.3 Use feedback to identify and develop ways to improve competence within available opportunities 3.4 Identify, access and complete professional development activities to assist career development 3.5 Store and maintain records and documents relating to achievements and assessments in accordance with organisational requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	3.1, 3.2, 3.3, 3.4	• Develops strategies to reflect on own performance, obtain feedback, and plan and source professional development opportunities
Reading	1.2, 2.1, 2.3, 3.1, 3.5	• Recognises and interprets textual information from relevant sources to understand organisation's policies and practices

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Writing	1.1, 1.3, 2.2, 2.3, 3.2, 3.5	• Prepares written reports and workplace documentation that communicate complex information clearly and effectively
Oral Communication	2.2, 2.3, 3.2	• Provides or seeks information using language suitable to audience and context • Employs listening and questioning techniques to confirm understanding
Numeracy	1.1, 1.2, 1.3	• Interprets numerical information related to budgets and timeframes
Navigate the world of work	1.2, 2.1, 2.3, 3.1, 3.5	• Identifies and understands roles and responsibilities in relation to organisational objectives, policies and procedures
Interact with others	2.2, 2.3, 3.2	• Selects and uses appropriate practices when communicating with internal and external stakeholders to seek or share information • Establishes and builds rapport and relationships with others to foster a culture of trust and honesty in communications
Get the work done	1.1-1.4, 2.3, 3.1, 3.2, 3.4, 3.5	• Plans, organises and implements tasks to meet organisational requirements • Systematically gathers and analyses information and evaluates options in order to anticipate potential problems and develop contingency plans • Uses the main features and functions of digital technologies and tools to complete work tasks efficiently and effectively

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBWOR404 Develop work priorities	BSBWOR404B Develop work priorities	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWOR404 Develop work priorities

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.1. Version created to correct mapping table information
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- prepare and communicate own work plan
- schedule work objectives and tasks to support the achievement of the workgroup goals
- review own work performance against workgroup objectives through self-assessment and seeking and acting on feedback from clients and colleagues
- plan and access learning opportunities to extend personal work competencies.

Note: if a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain how business technology applications can be used to schedule tasks and plan work
- explain techniques to prepare personal plans and establish priorities
- identify methods to identify and prioritise personal learning needs
- outline a range of professional development options
- explain methods to elicit, analyse and interpret feedback
- provide a detailed explanation of methods that can be used to evaluate own performance.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the industry capability - workplace effectiveness field of work and include access to:

- workplace documentation including policies and procedures, and benchmarks for work group productivity and performance
- workplace equipment and resources
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWOR501 Manage personal work priorities and professional development

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to create systems and process to organise information and prioritise tasks.

It applies to individuals working in managerial positions who have excellent organisational skills. The work ethic of individuals in this role has a significant impact on the work culture and patterns of behaviour of others as managers at this level are role models in their work environment.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Industry Capability – Workplace Effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish personal work goals	1.1 Serve as a positive role model in the workplace through personal work planning 1.2 Ensure personal work goals, plans and activities reflect the organisation's plans, and own responsibilities and accountabilities 1.3 Measure and maintain personal performance in varying work conditions, work contexts and when contingencies occur

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ELEMENT	PERFORMANCE CRITERIA
2. Set and meet own work priorities	2.1 Take initiative to prioritise and facilitate competing demands to achieve personal, team and organisational goals and objectives 2.2 Use technology efficiently and effectively to manage work priorities and commitments 2.3 Maintain appropriate work-life balance, and ensure stress is effectively managed and health is attended to
3. Develop and maintain professional competence	3.1 Assess personal knowledge and skills against competency standards to determine development needs, priorities and plans 3.2 Seek feedback from employees, clients and colleagues and use this feedback to identify and develop ways to improve competence 3.3 Identify, evaluate, select and use development opportunities suitable to personal learning style/s to develop competence 3.4 Participate in networks to enhance personal knowledge, skills and work relationships 3.5 Identify and develop new skills to achieve and maintain a competitive edge

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	3.1, 3.2, 3.3, 3.4, 3.5	• Investigates and uses a range of strategies to develop personal competence
Reading	1.2, 3.1, 3.2	• Analyses and interprets textual information from organisational policies and practices or feedback to inform personal development planning
Writing	3.2	• Uses feedback to prepare reports that summarise ways to improve competence
Oral Communication	3.2	• Uses active listening and questioning to seek and receive feedback
Navigate the world of work	1.2, 2.1	• Understands how own role contributes to broader organisational goals • Considers organisational protocols when planning own career development

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Interact with others	1.1, 3.2, 3.4	• Selects and uses appropriate conventions and protocols when communicating with diverse stakeholders • Uses interpersonal skills to establish and build positive working relationships with others
Get the work done	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1	• Plans and prioritises tasks in order to meet deadlines, manage role responsibilities and to manage own personal welfare • Identifies and uses appropriate technology to improve work efficiency

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBWOR501 Manage personal work priorities and professional development	BSBWOR501B Manage personal work priorities and professional development	Updated to meet Standards for Training Packages Minor edits to clarify Performance Criteria	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWOR501 Manage personal work priorities and professional development

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use business technology to create and use systems and processes to organise and prioritise tasks and commitments
- measure and maintain personal work performance including assessing competency against competency standards and seeking feedback
- maintain an appropriate work-life balance to manage personal health and stress
- participate in networks
- develop a personal development plan which includes career objectives and an action plan
- develop new skills.

Note: if a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain principles and techniques involved in the management and organisation of:
  - performance measurement
  - personal behaviour, self-awareness and personality traits identification
  - a personal development plan
  - personal goal setting
  - time
- discuss management development opportunities and options for self
- describe methods for achieving a healthy work-life balance
- outline organisation’s policies, plans and procedures
- explain types of learning style/s and how they relate to the individual
- describe types of work methods and practices that can improve personal performance.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the industry capability - workplace effectiveness field of work and include access to:

- workplace equipment and resources
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWOR502 Lead and manage team effectiveness

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to lead teams in the workplace and to actively engage with the management of the organisation.

It applies to individuals working at a managerial level who facilitate work teams and build a positive culture within their work teams. At this level, work will normally be carried out using complex and diverse methods and procedures requiring the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Industry Capability – Workplace Effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish team performance plan	1.1 Consult team members to establish a common understanding of team purpose, roles, responsibilities and accountabilities in accordance with organisational goals, plans and objectives 1.2 Develop performance plans to establish expected outcomes, outputs, key performance indicators (KPIs) and goals for work team 1.3 Support team members in meeting expected performance

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ELEMENT	PERFORMANCE CRITERIA
	outcomes
2. Develop and facilitate team cohesion	2.1 Develop strategies to ensure team members have input into planning, decision making and operational aspects of work team 2.2 Develop policies and procedures to ensure team members take responsibility for own work and assist others to undertake required roles and responsibilities 2.3 Provide feedback to team members to encourage, value and reward individual and team efforts and contributions 2.4 Develop processes to ensure that issues, concerns and problems identified by team members are recognised and addressed
3. Facilitate teamwork	3.1 Encourage team members and individuals to participate in and to take responsibility for team activities, including communication processes 3.2 Support the team in identifying and resolving work performance problems 3.3 Ensure own contribution to work team serves as a role model for others and enhances the organisation's image for all stakeholders
4. Liaise with stakeholders	4.1 Establish and maintain open communication processes with all stakeholders 4.2 Communicate information from line manager/management to the team 4.3 Communicate unresolved issues, concerns and problems raised by team members and follow-up with line manager/management and other relevant stakeholders 4.4 Evaluate and take necessary corrective action regarding unresolved issues, concerns and problems raised by internal or external stakeholders

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1, 4.4	• Analyses and interprets textual information from the organisation's policies, goals and objectives to establish team goals or to determine corrective action
Writing	1.2, 2.1, 2.2, 2.4, 4.2, 4.3, 4.4	• Prepares written reports and workplace documentation that communicate complex information clearly and effectively
Oral Communication	1.1, 2.3, 3.1, 4.1, 4.2, 4.3	• Engages in discussions or provides information using appropriate vocabulary and non-verbal features • Uses listening and questioning techniques to confirm understanding and to engage the audience
Navigate the world of work	1.1, 2.1, 2.2, 3.3	• Understands how own role contributes to broader organisational goals • Modifies or develops policies and procedures to achieve organisational goals
Interact with others	1.1, 1.3, 2.2, 2.3, 3.1, 3.2, 4.2, 4.3	• Selects and uses appropriate conventions and protocols when communicating with diverse stakeholders • Uses interpersonal skills to gain trust and confidence of team and provides feedback to others in forms that they can understand and use • Adapts personal communication style to build positive working relationships and to show respect for the opinions, values and particular needs of others • Plays a lead role in situations requiring effective collaboration, demonstrating high level conflict resolution skills and ability to engage and motivate others
Get the work done	1.2, 2.1, 2.2, 2.4, 3.2, 4.1, 4.3, 4.4	• Develops, implements and monitors plans and processes to ensure team effectiveness • Monitors and actively supports processes and development activities to ensure the team is focused on work outcomes • Plans for unexpected outcomes and implements creative responses to overcome challenges

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBWOR502 Lead and manage team effectiveness	BSBWOR502B Ensure team effectiveness	Updated to meet Standards for Training Packages	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
		Title change	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWOR502 Lead and manage team effectiveness

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use leadership techniques and strategies to facilitate team cohesion and work outcomes including:
  - encouraging and fostering shared understanding of purpose, roles and responsibilities
  - identifying and resolving problems
  - providing feedback to encourage, value and reward others
  - modelling desired behaviour and practices
- develop policies and procedures to ensure team members take responsibility for own work and assist others to undertake required roles and responsibilities
- establish processes to address issues and resolve performance issues
- support team to meet expected performance outcomes including providing formal and informal learning opportunities as needed
- develop performance plans with key performance indicators (KPIs), outputs and goals for individuals or the team which incorporate input from stakeholders
- communicate effectively with a range of stakeholders about team performance plans and team performance
- facilitate two-way flow of information between team and management relevant to team performance
- evaluate and take necessary corrective action regarding unresolved issues, concerns and problems raised by internal or external stakeholders.

Note: if a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain how group dynamics can support or hinder team performance

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- outline strategies that can support team cohesion, participation and performance
- explain strategies for gaining consensus
- explain issue resolution strategies.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the industry capability - workplace effectiveness field of work and include access to:

- workplace documents
- case studies and, where possible, real situations
- office equipment and resources
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBXTW301 Work in a team

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 5.0. Version created to rectify typographical error
Release 1	This version first released with BSB Business Services Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to work effectively as part of permanent or project based teams in a workplace within an industry.

This unit applies to a wide range of workers, but has a specific focus on the teamwork skills required for workers with limited responsibility for others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cross Sector Skill

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Identify individual work tasks within a team	1.1 Identify own responsibilities according to organisational policies and procedures 1.2 Identify own role and task requirements within team 1.3 Articulate team structure and roles of other team members 1.4 Plan and prioritise own tasks according to given time frames and

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	team requirements
2. Contribute effectively to team goals	2.1 Identify team goals and own responsibilities relevant to achieving team goals 2.2 Contribute ideas and information in team planning discussions 2.3 Share knowledge and skills with team members to enable effective teamwork and seek or offer support as required
3. Work effectively with team members	3.1 Communicate clearly and respectfully with team members, considering the needs of those from diverse backgrounds and roles 3.2 Collaborate effectively with team members, including those who are working remotely on workplace issues 3.3 Seek and provide assistance and feedback to team members where appropriate
4. Communicate effectively with team leaders	4.1 Receive and confirm understanding of task instructions or directions 4.2 Communicate personal commitments in a timely manner 4.3 Identify and report any issues preventing the completion of workplace tasks, according to organisational requirements 4.4 Seek and act upon feedback to improve personal performance and/or behaviour

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Interact with others	• Uses appropriate communication practices when communicating with others • Cooperates and collaborates with team members
Get the work done	• Plans and implements routine tasks and workload making limited decisions on sequencing, timing and collaboration, seeking assistance in setting priorities • Uses digital technology to find, record or communicate information

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Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBXTW301 Work in a team

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 5.0. Version created to rectify typographical error
Release 1	This version first released with BSB Business Services Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria, and foundation skills of this unit, including on at least one occasion, evidence of the ability to:

- identify individual and team roles and responsibilities
- plan assigned tasks according to priorities and deadlines, and in accordance with organisational requirements
- contribute to achievement of team goals
- share knowledge, ideas and problems with team members
- act on feedback in a constructive manner
- collaborate with a remote team member on a workplace issue.
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- organisational requirements relevant to working in a workplace team:
  - workplace policies
  - codes of conduct
  - organisational reputation and culture
- typical compositions of workplace teams, and the roles and responsibilities of team members within organisations
- techniques for giving and receiving feedback in a constructive manner
- methods to support team members
- key principles of cross-cultural communication and communication with individuals with special needs or disabilities

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- methods and tools to work with others remotely:
  - collaboration via phone or mobile
  - collaboration via video conference
  - collaboration via other digital tools or software
- issues that may impact team performance and outcomes
- techniques to collaborate effectively with those working remotely.
-

Assessment Conditions

Mandatory conditions for assessment include:

- A safe working or simulated environment

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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CSCORG003 Prepare reports

Modification History

Release	Comments
1	This unit was released in CSC Correctional Services Training Package release 1.0 and meets the Standards for Training Packages. This unit supersedes and is equivalent to CSCORG301A Prepare reports. • PC wording revised in all Elements • PC 2.4 removed

Application

This unit describes the skills required to identify organisational reporting needs and collect, check and record information using available technology.

This unit applies to those working in a range of generalist and specialist roles within a range of occupational areas. For this reason this unit may be significantly customised, particularly in the assessment of knowledge, based on different organisational, sector and location requirements.

The skills and knowledge described in this unit must be applied within the legislative, regulatory and policy environment in which they are carried out. Organisational policies and procedures must be consulted and adhered to, particularly those related to reporting.

Those undertaking this unit consistently work independently and as part of a coordinated team while drawing upon support from a range of familiar resources. They would undertake complex tasks in a moderate range of familiar contexts.

No licensing, legislative or certification requirements apply to unit at the time of publication.

Competency Field

Organisational administration and management

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Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section.
1. Identify reporting needs	1.1 Identify the reasons and requirements for recording and reporting. 1.2 Adjust written communication to suit audience and situation.
2. Collect and check information	2.1 Collect information and sort it in logical order according to the nature of the report. 2.2 Check the information with a range of authorities and confirm its accuracy, relevance and status. 2.3 Check whether more information is needed and gather it from a range of sources where appropriate.
3. Record information	3.1 Record and report information in the required format, style, structure and timeframe. 3.2 Ensure that any conclusions drawn and recommendations match the report information. 3.3 Use technology available in the workplace to store and retrieve data. 3.4 Ensure that all written material complies with legislative requirements and organisational policies and procedures.

Foundation Skills

The foundation skills demands of this unit have been mapped for alignment with the Australian Core Skills Framework (ACSF). The following tables outline the performance levels indicated for successful attainment of the unit.

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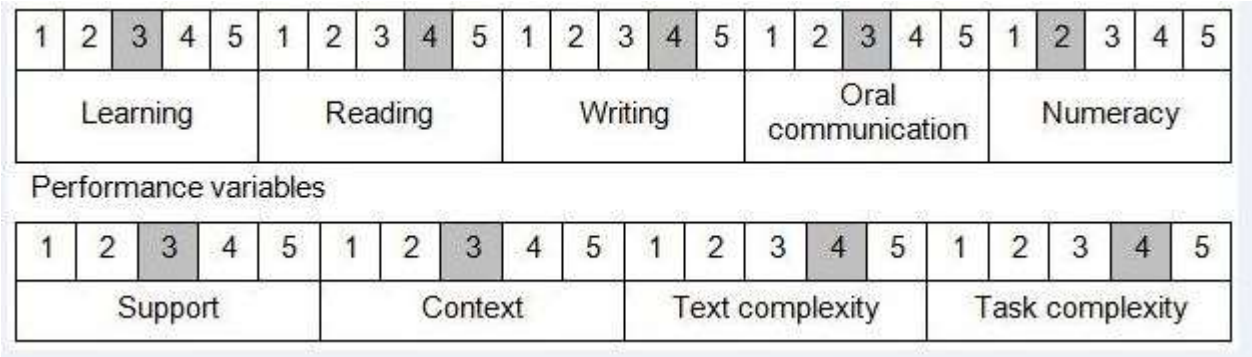
ACSF levels indicative of performance:



Further information on ACSF and the foundation skills underpinning this unit can be found in the Foundation Skills Guide http://www.govskills.com.au/guides/correctional-services/foundation-skills-guide on the GSA website.

Unit Mapping Information

Supersedes and is equivalent to CSCORG301A Prepare reports.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=114e25cd-3a2c-4490-baae-47d68dcd2fde

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=114e25cd-3a2c-4490-baae-47d68dcd2fde

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Assessment Requirements for CSCORG003 Prepare reports

Modification History

Release	Comments
1	These Assessment Requirements were released in CSC Correctional Services Training Package release 1.0 and meet the Standards for Training Packages. • Assessment Requirements revised

Please refer to the advice in the CSC Assessment Guide.

Performance Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the candidate must demonstrate evidence of performance of the following on at least two occasions.

- reading and interpreting documents containing the required information
- recording complete, accurate, clear and objective information
- recognising the urgency and high risk components of specific reports
- handling and storing information securely and safely

Knowledge Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the depth of knowledge demonstrated must be appropriate to the job context of the candidate.

- organisation's policies and procedures related to report writing
- basic written communication techniques
- security of information, confidentiality and right to information
- discriminative language
- technical and professional language used in the work environment
- an awareness of legislation and statutory obligations of reporting in own state or territory justice system, including legal requirements of own role

Assessment Conditions

Valid assessment of this unit requires a workplace environment or one that closely resembles normal work practice and replicates the range of conditions likely to be encountered when reading and writing routine workplace reports, including coping with difficulties, irregularities and changes to routine.

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This unit has been identified by industry as suitable for holistic assessment with:

- CSCORG002 Communicate effectively
- CSCSAS001 Maintain security
- CSCSAS010 Conduct searches
- CSCTRA001 Maintain security during escort

Refer to advice in the CSC Assessment Guide http://www.govskills.com.au/guides/correctional-services/assessment-guide.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=114e25cd-3a2c-4490-baae-47d68dcd2fde

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=114e25cd-3a2c-4490-baae-47d68dcd2fde

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Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=114e25cd-3a2c-4490-baae-47d68dcd2fde

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FDFPPL3003A Support and mentor individuals and groups

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the skills and knowledge required to model appropriate work practices, provide feedback to groups and individuals and facilitate group processes.

Application of the Unit

Application of the unit	This unit applies to support provided to a team or work group. A person competent in this unit may or may not have formal responsibility for managing others.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Support others in the work area	1.1. Individuals are mentored to meet work requirements 1.2. Performance that is inappropriate is identified and corrective action taken 1.3. Feedback on performance is provided
2. Facilitate group processes	2.1. Purpose of group process is identified 2.2. Meeting procedures required to achieve an agreed outcome are determined and applied 2.3. Group members are engaged in the process 2.4. Clear outcomes are reached in a timely manner

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Ability to: • model behaviour consistent with company policies and procedures • identify behaviour or performance that is unacceptable • structure interventions and feedback to clearly convey required standard of performance • apply appropriate explanation, demonstration, questioning and active listening techniques when interacting with others

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REQUIRED SKILLS AND KNOWLEDGE

- provide feedback appropriate to the audience requirements
- recognise and respond appropriately to difference and diversity in the workplace
- provide and/or arrange opportunities to develop/practice appropriate skills
- plan group processes, including clearly identifying the purpose of the discussion or meeting, confirming the appropriate people are available and planning a basic outline of the approach and/or agenda
- facilitate meetings, including confirming with group members the purpose of the discussion or meeting, engaging people in discussion and assisting the group to reach an agreed outcome within the allotted timeframe
- record meeting outcomes
- follow up group processes, including identifying actions required to follow up outcomes of a discussion or meeting
- use oral communication skills/language competence to fulfil the job role as specified by the organisation, including questioning, active listening, asking for clarification and seeking advice from supervisor
- work cooperatively within a culturally diverse workforce

Required knowledge

Knowledge of:

- company policies and procedures as they apply to the work area, including areas covered by legislation, such as sexual harassment, equal employment opportunity (EEO)/affirmative action, anti-discrimination, racial vilification and workplace bullying, occupational health and safety (OHS), food safety and environmental management
- industry awards and enterprise agreements to develop an awareness of the main issues covered as they affect day-to-day work arrangements
- systems and programs in the workplace to support development and mentoring of others
- relevant resources to support mentoring role and responsibilities
- techniques for structuring and explaining work-related information to meet the needs of people in the work area
- interpersonal skills, including appropriate questioning, listening and feedback techniques
- training/assessment arrangements in the workplace and related responsibilities
- boundaries of responsibility and related procedures for feedback, counselling and disciplinary procedures
- formal arrangements and responsibilities for consulting others relating to work role
- meeting procedures and recording requirements as relevant in the workplace

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Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	Assessment must be carried out in a manner that recognises the cultural and literacy requirements of the assessee and is appropriate to the work performed. Competence in this unit must be achieved in accordance with food safety standards and regulations.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of ability to: • model behaviour and performance consistent with company policy and procedures • support others in their behaviour and performance • provide feedback on performance and take corrective action on inappropriate behaviours • plan and organise group meetings or activities to engage participation • support group meetings to gain clear outcomes.
Context of and specific resources for assessment	Assessment must occur in a real or simulated workplace where the assessee has access to: • advice on workplace policies, codes of practice and procedures • opportunities to interact with others using typical workplace communication processes • typical group forums, such as structured group discussions, committee meetings and work groups • workplace systems and procedures for consultation, feedback, counselling and discipline • advice on conditions of employment and entitlements • information systems, including recording and retrieval systems.
Method of assessment	This unit should be assessed together with core units and other units of competency relevant to the function or work role. Examples could be: • FDFOP2005A Work in a socially diverse environment • FDFPPL3004A Lead work teams and groups.
Guidance information for	To ensure consistency in one's performance, competency should be demonstrated on more than one occasion over

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EVIDENCE GUIDE	
assessment	a period of time in order to cover a variety of circumstances, cases and responsibilities, and where possible, over a number of assessment activities.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Policies and procedures	Work is carried out in accordance with company policies, procedures, regulatory and licensing requirements, legislative requirements and industrial awards and agreements
Mentoring and feedback arrangements	Mentoring and feedback arrangements may be: • formal or informal
Corrective action	Corrective action may include: • reporting an incident to a more senior person as appropriate
Group processes	Group processes may include: • formal meeting procedures and informal discussions • group meetings
Communication systems	Communication systems reflect the culture of the workplace and the workforce. This may include: • communicating with people from diverse cultural backgrounds and with people with limited English language and literacy skills
Meeting procedures	Meeting procedures include: • developing an agenda • seeking input • recording actions arising and working towards

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RANGE STATEMENT	
	an agreed outcome within time allocation

Unit Sector(s)

Unit sector	People management/planning/logistics

Competency field

Competency field	

Co-requisite units

Co-requisite units		

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FNSASIC302 Develop, present and negotiate client solutions

Modification History

Release	Comments
Release 1	This version first released with FNS Financial Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to provide advice on deposit products, non-cash payment facilities and general insurance products

It applies to individuals with excellent communication skills who are authorised as Australian Securities and Investments Commission (ASIC) registered Australian financial services licence (AFSL) holders to provide advice about products and services at ASIC Tier 2 level.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the FNS Implementation Guide Companion Volume or the relevant regulator for specific guidance on requirements.

Unit Sector

ASIC units

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop appropriate strategies and solutions	1.1 Determine appropriate strategy to provide for identified needs and outcomes by analysing products and client risk profile, and conducting assessment of client needs 1.2 Conduct relevant research, analysis and product modelling, and draft appropriate solution, plan, policy or transaction for presentation to client demonstrating understanding of ASIC identified generic and specialist knowledge relevant to products

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ELEMENT	PERFORMANCE CRITERIA
	being offered
2. Present appropriate strategies and solutions to client	2.1 Explain and discuss proposed transaction with client in clear and unambiguous way, demonstrating product knowledge appropriate for service or product offered 2.2 Ensure that relevant details, terms and conditions of product or service are reinforced to client with impacts and possible risks of solution disclosed in clear and concise manner 2.3 Provide client with written supporting documentation and guide client through key aspects of documentation
3. Negotiate financial plan, policy or transaction with client	3.1 Discuss and clarify any concerns or issues client has regarding proposed plan, policy or transaction 3.2 Seek confirmation to ensure that client understands proposed plan, policy or transaction
4. Coordinate implementation of agreed plan, policy or transaction	4.1 Gain client's formal agreement to proposed plan, policy or transaction 4.2 Clearly explain and confirm that client understands associated fees, cost structures and timeframes for execution and processing
5. Complete and maintain necessary documentation	5.1 Ensure that proposal and all other statutory and transactional documents are completed and signed off by client 5.2 Confirm that signed agreement and all copies of appropriate documentation are exchanged
6. Provide ongoing service where requested by client	6.1 Ensure that type and form of ongoing service, including reporting on performance and review of plan, policy or transaction, is understood by client 6.2 Clearly explain fees and costs for any ongoing and specifically defined services and ensure client understands these expenses 6.3 Provide ongoing services as required

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.2	• Recognises and analyses information from relevant sources to safeguard client needs and ensure currency of product and service
Writing	1.1, 1.2, 2.3, 3.2, 4.2, 5.1, 5.2, 6.1-6.3	• Uses clear, specific and industry related terminology to complete and update workplace documentation
Oral Communication	2.1-2.3, 3.1, 3.2, 4.2, 5.2, 6.1-6.3	• Clearly articulates requirements using language appropriate to the audience and environment • Confirms the understanding of others through active listening and questioning
Numeracy	4.2, 6.2	• Interprets and uses financial product information and analyses numerical data within spreadsheets and database
Navigate the world of work	1.2 , 5.1	• Develops knowledge of legislation and regulations relevant to current role • Takes responsibility for providing advisory services and documentation that comply with legal and organisational requirements
Interact with others	2.1-2.3, 4.1, 4.2, 6.1, 6.2	• Selects and uses appropriate conventions and protocols when communicating with clients to build rapport, seek or share information, negotiate agreement and maintain service relationship • Adapts personal communication style to show respect for the values, beliefs and cultural expectations of others
Get the work done	1.1, 1.2, 2.3, 5.1, 5.2, 6.3	• Takes responsibility for the sequence and priority of tasks within own workload to achieve effective and compliant outcomes for all stakeholders • Uses analytical processes to determine appropriate solutions that meet client needs • Uses familiar digital tools and systems to complete job tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
FNSASIC302 Develop, present and negotiate client solutions	FNSASIC302C Develop, present and negotiate client solutions	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c7200cc8-0566-4f04-b76f-e89fd6f102fe

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Assessment Requirements for FNSASIC302 Develop, present and negotiate client solutions

Modification History

Release	Comments
Release 1	This version first released with FNS Financial Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- interpret and comply with industry regulations and codes of practice including, for insurance products, the required approval or authority to accept the transfer of risk
- explain the characteristics, benefits and impacts of financial products and services to clients
- present appropriate financial products and services to clients and successfully negotiate a plan, policy or transaction.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must satisfy the knowledge requirements relevant to the products and activities in which advice is given.

For general insurance, deposit products and non-cash payments and relevant first home saver account products the individual must:

- explain the legal environment including disclosure and compliance covering:
  - role of the representative or adviser
  - relevant legal principles including the Corporations Act, Financial Services Reform Act (FSRA), Competition and Consumer Act, Insurance Contracts Act and Australian Securities and Investments Commission (ASIC) Act
  - relationship between ethics and regulatory requirements including good faith, utmost good faith, full disclosure of remuneration and fees, and any other conflicts of interest which may influence the adviser’s recommendation
- name relevant industry codes of practice and conduct

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- identify complaints resolution procedures (internal and external)
- outline relevant ASIC regulatory guidelines.

For general insurance the individual must:

- summarise the characteristics and participants of Australian insurance markets and the roles played by intermediaries, and identify insurance products including:
  - definition of an insurance product
  - conditions, exclusions and level of coverage of risk transfer products
  - types of insurance products
  - pricing of risk products
- identify taxation issues relating to insurance products
- explain advisory functions including:
- role of the representative, broker or adviser
  - participants in the insurance advisory services market
  - range of services provided
  - profile and financial information of the client
  - appropriateness of a risk assessment
- summarise the specific product knowledge for the general insurance products in which advice is given including:
  - standard cover (and deviations)
  - policy wordings
  - taxes and charges
  - insurance claims
  - premium rating and risk selection
  - reporting
  - product development
  - underwriting.

For deposit products and non-cash payment facilities the individual must:

- name the types of deposit products and non-cash payment products
- summarise the product characteristics.

For first home saver accounts the individual must:

- name the types of first home saver account products including the range of accounts, associated risks and alternative products
- summarise the product characteristics – eligibility and withdrawal, and government conditions
- explain the taxation issues relating to first home saver accounts.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the financial services and products advice field of work and include access to:

- common office equipment, technology, software and consumable
- financial services product information.

Assessors must satisfy NVR/AQTF assessor requirements

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c7200cc8-0566-4f04-b76f-e89fd6f102fe

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FNSPIM410 Collect, assess and use information

Modification History

Release	Comments
Release 1	This version first released with FNS Financial Services Training Package Training Package Version 1.0.

Application

This unit describes the skills and knowledge involved in obtaining information from various sources, analysing and interpreting the information to draw useful conclusions and provide advice to customers or management.

It applies to individuals who work independently and in teams using specialised knowledge, systematic approaches and research skills to complete requirements.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the FNS Implementation Guide Companion Volume or the relevant regulator for specific guidance on requirements.

Unit Sector

Personal injury management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Clarify the requirements for information	1.1 Clarify scope and purpose for which the information is required 1.2 Determine timelines for collection and presentation of information
2. Collect and organise information and data	2.1 Identify relevant sources of information and data 2.2 Obtain information and data and appropriately record in

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ELEMENT	PERFORMANCE CRITERIA
	accordance with legislative requirements 2.3 Check information and data to confirm that it is accurate, up to date and comprehensive 2.4 Organise information and data for ease of use
3. Analyse and draw conclusions	3.1 Interpret and analyse information and data 3.2 Determine and discuss significance of information and data with appropriate personnel 3.3 Ascertain conclusions based on information and data
4. Present information in appropriate format	4.1 Present information in an appropriate format and in accordance with organisation procedures 4.2 Evaluate completeness and accuracy of the information and data and ensure the conclusions are justified 4.3 Ensure the deadline for presentation of the information is met

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1, 2.2, 2.3, 3.1, 4.2	• Interprets analyses and evaluates information from a range of sources and consolidates information relevant to requirements
Writing	1.1, 2.2, 2.4, 3.2, 3.3, 4.1	• Accurately records information from investigations using formats appropriate for purpose • Uses language, concepts and terminology appropriate to audience to convey, clarify and present explicit information and requirements
Oral Communication	1.1, 3.2	• Participates in verbal exchanges using active listening and questioning and to determine and confirm information • Presents data/information using language, tone and pace appropriate for the audience and purpose
Numeracy	1.2, 2.3, 2.4, 3.1, 4.2	• Performs basic mathematical calculations to determine accuracy of data to achieve required outcomes • Organises and interprets numerical data from a range

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		of sources • Develops timelines for collection and presentation of information
Navigate the world of work	2.2, 4.1	• Operates according to legal responsibilities and recognises and responds to set protocols
Get the work done	1.1, 1.2, 2.1, 2.2, 2.4, 3.2, 3.3, 4.1, 4.3	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effectiveness • Uses the main features and functions of digital tools to complete work tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
FNSPIM410 Collect, assess and use information	FNSPIM410A Collect, assess and use information	Updated to meet Standards for Training Packages. Minor edits to clarify performance criteria.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c7200cc8-0566-4f04-b76f-e89fd6f102fe

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Assessment Requirements for FNSPIM410 Collect, assess and use information

Modification History

Release	Comments
Release 1	This version first released with FNS Financial Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- clarify requirements for collection of information
- collect and organise information
- analyse information and draw conclusions
- present information in appropriate formats
- use organisational technology.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- compare and contrast investigation methods
- describe the key types and sources of information to access
- describe the key features of relevant:
  - organisational policy and procedures
  - organisational products and services
  - information and communications technology
  - legislative reporting requirements.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the personal injury management field of work and include access to:

- office equipment, technology, software and consumables

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- organisational records, policy and procedures.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c7200cc8-0566-4f04-b76f-e89fd6f102fe

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HLTAID003 Provide first aid

Modification History

Release	Comments
Release 6	Updated: • assessor requirements statement • foundation skills lead in statement • licensing statement • modification history to reflect 2012 standards Equivalent outcome.
Release 5	Updated mapping information. Changes to assessment requirements. Equivalent outcome.
Release 4	Updated mapping information. Equivalent outcome.
Release 3	Updated mapping information.
Release 2	Minor corrections to formatting to improve readability. Equivalent competency outcome.
Release 1	This version was released in *HLT Health Training Package release 1.0* and meets the requirements of the 2012 Standards for Training Packages. Significant changes to elements and performance criteria, changes to scope of unit. New evidence requirements for assessment. Removal of prerequisite unit.

Application

This unit describes the skills and knowledge required to provide a first aid response to a casualty. The unit applies to all workers who may be required to provide a first aid response in a range of situations, including community and workplace settings.

Specific licensing /regulatory requirements relating to this competency, including requirements for refresher training should be obtained from the relevant national/state/territory Work Health and Safety Regulatory Authorities.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements define the essential outcomes.	*Performance criteria specify the level of performance needed to demonstrate achievement of the element.*
1. Respond to an emergency situation	1.1 Recognise an emergency situation 1.2 Identify, assess and manage immediate hazards to health and safety of self and others 1.3 Assess the casualty and recognise the need for first aid response 1.4 Assess the situation and seek assistance from emergency response services
2. Apply appropriate first aid procedures	2.1 Perform cardiopulmonary resuscitation (CPR) in accordance with Australian Resuscitation Council (ARC) guidelines 2.2 Provide first aid in accordance with established first aid principles 2.3 Display respectful behaviour towards casualty 2.4 Obtain consent from casualty where possible 2.5 Use available resources and equipment to make the casualty as comfortable as possible 2.6 Operate first aid equipment according to manufacturer's instructions 2.7 Monitor the casualty's condition and respond in accordance with first aid principles
3. Communicate details of the incident	3.1 Accurately convey incident details to emergency response services 3.2 Report details of incident to workplace supervisor as appropriate 3.3 Maintain confidentiality of records and information in line with statutory and/or organisational policies

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ELEMENT	PERFORMANCE CRITERIA
Elements define the essential outcomes.	*Performance criteria specify the level of performance needed to demonstrate achievement of the element.*
4. Evaluate the incident and own performance	4.1 Recognise the possible psychological impacts on self and other rescuers involved in critical incidents 4.2 Participate in debriefing to address individual needs

Foundation Skills

The Foundation Skills describe those required skills (language, literacy, numeracy and employment skills) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

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Assessment Requirements for HLTAID003 Provide first aid

Modification History

Release	Comments
Release 6	Updated: • assessor requirements statement • foundation skills lead in statement • licensing statement • modification history to reflect 2012 standards Equivalent outcome.
Release 5	Updated mapping information. Changes to assessment requirements. Equivalent outcome.
Release 4	Updated mapping information. Equivalent outcome.
Release 3	Updated mapping information.
Release 2	Minor corrections to formatting to improve readability. Equivalent competency outcome.
Release 1	This version was released in *HLT Health Training Package release 1.0* and meets the requirements of the 2012 Standards for Training Packages. Significant changes to elements and performance criteria, changes to scope of unit. New evidence requirements for assessment. Removal of prerequisite unit.

Performance Evidence

e candidate must show evidence of the ability to complete tasks outlined in elements and performance criteria of this unit, manage tasks and manage contingencies in the context of the job role.

There must be evidence that the candidate has completed the following tasks in line with state/territory regulations, first aid codes of practice, Australian Resuscitation Council (ARC) guidelines and workplace procedures:

- Followed DRSABCD in line with ARC guidelines, including:

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  - performed at least 2 minutes of uninterrupted single rescuer cardiopulmonary resuscitation (CPR) (5 cycles of both compressions and ventilations) on an adult resuscitation manikin placed on the floor
  - performed at least 2 minutes of uninterrupted single rescuer CPR (5 cycles both compressions and ventilations) on an infant resuscitation manikin placed on a firm surface
  - responded appropriately in the event of regurgitation or vomiting
  - managed the unconscious breathing casualty
  - followed single rescue procedure, including the demonstration of a rotation of operators with minimal interruptions to compressions
  - followed the prompts of an Automated External Defibrillator (AED)
- Responded to at least two simulated first aid scenarios contextualised to the candidate's workplace/community setting, including:
  - conducted a visual and verbal assessment of the casualty
  - demonstrated safe manual handling techniques
  - post-incident debrief and evaluation
  - provided an accurate verbal or written report of the incident
- Applied first aid procedures for the following:
  - allergic reaction
  - anaphylaxis
  - bleeding control
  - choking and airway obstruction
  - envenomation, using pressure immobilisation
  - fractures, sprains and strains, using arm slings, roller bandages or other appropriate immobilisation techniques
  - respiratory distress, including asthma
  - shock

Knowledge Evidence

The candidate must be able to demonstrate essential knowledge required to effectively complete tasks outlined in elements and performance criteria of this unit, manage tasks and manage contingencies in the context of the work role. This includes knowledge of:

- State/Territory regulations, first aid codes of practice and workplace procedures including:
  - ARC Guidelines relevant to provision of CPR and first aid
  - safe work practices to minimise risks and potential hazards
  - infection control principles and procedures, including use of standard precautions
  - requirements for currency of skill and knowledge
- legal, workplace and community considerations including:
  - awareness of potential need for stress-management techniques and available support following an emergency situation
  - duty of care requirements

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  - respectful behaviour towards a casualty
  - own skills and limitations
  - consent
  - privacy and confidentiality requirements
  - importance of debriefing
- considerations when providing first aid including:
  - airway obstruction due to body position
  - appropriate duration and cessation of CPR
  - appropriate use of an AED
  - chain of survival
  - standard precautions
  - how to conduct a visual and verbal assessment of the casualty
- principles and procedures for first aid management of the following scenarios:
  - abdominal injuries
  - allergic reaction
  - anaphylaxis
  - basic care of a wound
  - bleeding control
  - burns
  - cardiac conditions, including chest pain
  - choking and airway obstruction
  - crush injuries
  - diabetes
  - dislocations
  - drowning
  - envenomation
  - environmental impact, including hypothermia, hyperthermia, dehydration and heat stroke
  - eye and ear injuries
  - fractures
  - febrile convulsions
  - head, neck and spinal injuries
  - minor skin injuries
  - needle stick injuries
  - poisoning and toxic substances
  - respiratory distress, including asthma
  - seizures, including epilepsy
  - shock
  - soft tissue injuries, including strains and, sprains
  - stroke

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  - unconsciousness
- basic anatomy and physiology relating to:
  - how to recognise a person is not breathing normally
  - chest
  - response/consciousness
  - upper airway and effect of positional change
  - considerations in provision of first aid for specified conditions

Assessment Conditions

Skills must be demonstrated working individually in an environment that provides realistic in-depth, industry-validated scenarios and simulations to assess candidates' skills and knowledge.

Assessment resources must include:

- adult and infant resuscitation manikins in line with ARC Guidelines for the purpose of assessment of CPR procedures
- adrenaline auto-injector training device
- AED training device
- placebo bronchodilator and spacer device
- roller bandages
- triangular bandages
- workplace First Aid kit
- workplace injury, trauma and/or illness record, or other appropriate workplace incident report form for written reports
- wound dressings

Simulated assessment environments must simulate the real-life working environment where these skills and knowledge would be performed, with all the relevant equipment and resources of that working environment.

Assessor requirements

Assessors must satisfy the Standards for Registered Training Organisations (RTOs) 2015/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

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HLTAID011 Provide First Aid

Modification History

Not applicable.

Application

This unit describes the skills and knowledge required to provide a first aid response to a casualty in line with first aid guidelines determined by the Australian Resuscitation Council (ARC) and other Australian national peak clinical bodies.

The unit applies to all persons who may be required to provide a first aid response in a range of situations, including community and workplace settings.

Specific licensing/regulatory requirements relating to this competency, including requirements for refresher training should be obtained from the relevant national/state/territory Work Health and Safety Regulatory Authorities.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Respond to an emergency situation.	1.1. Recognise and assess an emergency situation. 1.2. Ensure safety for self, bystanders and casualty. 1.3. Assess the casualty and recognise the need for first aid response. 1.4. Seek assistance from emergency services.
2. Apply appropriate first aid procedures.	2.1. Perform cardiopulmonary resuscitation (CPR) in accordance ARC guidelines. 2.2. Provide first aid in accordance with established first aid principles. 2.3. Display respectful behaviour towards casualty. 2.4. Obtain consent from casualty where possible. 2.5. Use available resources and equipment to make the casualty as comfortable as possible. 2.6. Operate first aid equipment according to manufacturers' instructions. 2.7. Monitor the casualty's condition and respond in accordance with first aid principles.

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3. Communicate details of the incident.	3.1. Accurately convey incident details to emergency services. 3.2. Report details of incident in line with appropriate workplace or site procedures. 3.3. Complete applicable workplace or site documentation, including incident report form. 3.4. Maintain privacy and confidentiality of information in line with statutory or organisational policies.
4. Review the incident.	4.1. Recognise the possible psychological impacts on self and other rescuers and seek help when required. 4.2. Contribute to a review of the first aid response as required.

Foundation Skills

The Foundation Skills describe those required skills (language, literacy, numeracy and employment skills) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and not equivalent to HLTAID003 Provide first aid

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

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Assessment Requirements for HLTAID011 Provide First Aid

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the workplace or community setting.

There must be evidence that the candidate has completed the following tasks in line with State/Territory regulations, first aid codes of practice, first aid guidelines determined by the Australian Resuscitation Council (ARC) and other Australian national peak clinical bodies and workplace or site procedures:

- managed, in line with ARC guidelines, the unconscious, breathing casualty including appropriate positioning to reduce the risk of airway compromise
- managed, in line with ARC guidelines, the unconscious, non-breathing adult, including:
  - performing at least 2 minutes of uninterrupted single rescuer cardiopulmonary resuscitation (CPR) (5 cycles of both compressions and ventilations) on an adult resuscitation manikin placed on the floor
  - following the prompts of an automated external defibrillator (AED) to deliver at least one shock
  - demonstrating a rotation of single rescuer operators with minimal interruptions to compressions
  - responding appropriately in the event of regurgitation or vomiting
- managed, in line with ARC guidelines, the unconscious, non-breathing infant, including:
  - performing at least 2 minutes of uninterrupted single rescuer CPR (5 cycles both compressions and ventilations) on an infant resuscitation manikin placed on a firm surface
- managed casualties, with the following:
  - anaphylaxis
  - asthma
  - non-life-threatening bleeding
  - choking
  - envenomation, using pressure immobilisation
  - fractures, dislocations, sprains and strains, using appropriate immobilisation techniques
  - minor wound cleaning and dressing
  - nosebleed
  - shock

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- responded to at least one simulated first aid incident contextualised to the candidate's workplace or community setting, where the candidate has no knowledge of the casualty's condition prior to starting treatment, including:
  - identifying the casualty's illness or injury through history, signs and symptoms
  - using personal protective equipment (PPE) as required
  - providing appropriate first aid treatment
  - conveying incident details to emergency services or advising casualty on any required post incident action
  - providing an accurate verbal and written report of the incident
  - reviewing the incident.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- guidelines and procedures including:
  - ARC guidelines relevant to the provision of first aid
  - first aid guidelines from Australian national peak clinical bodies
  - potential incident hazards and risk minimisation processes when providing first aid
  - infection control procedures, including use of standard precautions and resuscitation barrier devices
  - requirements for currency of skill and knowledge
  - first aid codes of practice
  - appropriate workplace or site procedures relevant to the provision of first aid
  - contents of first aid kits
- legal, workplace and community considerations including:
  - duty of care requirements
  - own skills and limitations
  - consent and how it relates to the conscious and unconscious casualty
  - privacy and confidentiality requirements
  - awareness of potential need for stress management techniques and available support for rescuers
- considerations when providing CPR, including:
  - upper airway and effect of positional change
  - appropriate duration and cessation of CPR
  - appropriate use of an AED
  - safety and maintenance procedures for an AED
  - chain of survival
  - how to access emergency services
- techniques for providing CPR to adults, children and infants including:
  - how to recognise that a casualty is unconscious and not breathing normally

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  - rate, ratio and depth of compressions and ventilations
  - correct hand positioning for compressions
  - basic anatomy, physiology and the differences between adults, children and infants relating to CPR
- signs, symptoms and management of the following conditions and injuries:
  - allergic reaction
  - anaphylaxis
  - asthma
  - non-life-threatening and life-threatening bleeding
  - burns
  - cardiac conditions, including chest pain
  - choking
  - diabetes
  - drowning
  - envenomation - all current treatments
  - eye injuries
  - fractures, dislocations, strains and sprains
  - head, neck and spinal injuries
  - hypothermia
  - hyperthermia
  - minor wounds
  - nose-bleed
  - poisoning
  - seizures
  - shock
  - sharps injuries
  - stroke.

Assessment Conditions

Each candidate to demonstrate skills in an environment that provides realistic in-depth, scenarios and simulations to assess candidates' skills and knowledge.

Due to the nature of this type of training, it is acceptable for the performance evidence to be collected in a simulated environment.

Compression and ventilation skills must be demonstrated on resuscitation manikins following ARC guidelines for the purpose of assessment of CPR procedures.

Assessment must ensure access to:

- adult and infant resuscitation manikins following ARC guidelines for the purpose of assessment of CPR procedures
- adrenaline auto-injector training device

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- AED training devices
- workplace first aid kit
- placebo bronchodilator and spacer device
- different types of wound dressings and bandages
- blankets and items to treat for shock
- personal protective equipment (PPE)
- workplace injury, trauma or illness record, or other applicable workplace or site incident report form.

Simulated assessment environments must simulate real-life situations where these skills and knowledge would be performed, with all the relevant equipment and resources of that workplace or community environment.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors and must hold this unit or demonstrate equivalent skills and knowledge to that contained within this unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

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ICTWEB201 Use social media tools for collaboration and engagement

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to establish a social networking presence, using social media tools and applications. It includes the requirement to review, compare, and use different types of social networking tools and applications.

It applies to information and communications technology (ICT) personnel who need to develop a social networking web presence for a small or large office environment, using social media tools and applications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Describe the different types of social media tools and applications	1.1 Explain the characteristics of the term ‘social media’ 1.2 Identify different types of social-media tools and applications 1.3 Illustrate some of the issues associated with the use of social media tools and applications

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ELEMENT	PERFORMANCE CRITERIA
2. Compare different types of social media tools and applications	2.1 Select one social media type to review 2.2 Review the most popular tools, and applications, within that social media type 2.3 Itemise the benefits across a range of the most popular tools and applications 2.4 Select the most appropriate social media tool or application
3. Set up and use, popular social media tools and applications	3.1 Identify the social media tools and applications available for possible implementation 3.2 Initiate the preferred social media tools, and applications, for use 3.3 Establish the social media interface, using text and file content 3.4 Initiate social networking interaction 3.5 Test and evaluate tools, and applications, for ease of use 3.6 Present the findings

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 2.2	• Extract the relevant information from technical and organisational documents
Writing	1.1, 2.2, 2.3, 3.3, 3.4, 3.6	• Develop the content in a manner that supports and conveys information, using the appropriate structures and specialised language
Navigate the world of work	1.3	• Understands legal and ethical responsibilities, regarding the use of social media tools
Get the work done	2.1, 2.2, 2.4, 3.1, 3.2, 3.5, 3.6	• Makes routine decisions and implements standard procedures for routine tasks • Understands the purposes, specific functions, and the key features of common digital systems and tools, and operates them effectively to complete routine tasks

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWEB201 Use social media tools for collaboration and engagement	ICAWEB201A Use social media tools for collaboration and engagement	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB201 Use social media tools for collaboration and engagement

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify different types of social media tools and applications, and the issues associated with their use
- access the internet, set up a social networking presence and upload and link a wide variety of files
- use and evaluate social media tools and applications.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list basic technical terminology in relation to social networking, social media applications, and tools
- outline basic methods of uploading images, text files, portable document format (PDF) files, audio files, video files, and link the associated files
- state the features, and functions, of social media applications
- list import and export software functions
- explain how to link documents
- explain the process of tagging, in order to facilitate collaborative folksonomy
- list social media applications and procedures, for connecting to social networking sites
- identify and describe, input and output devices
- describe, and use, really simple syndication (RSS) feeds to connect a social network.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the website technologies field of work, and include access to:

- a personal computer (PC) and printer
- the internet
- social-media tools and applications
- online instructional documents.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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MEM05004 Perform routine oxy fuel gas welding

Modification History

Release 1. Supersedes and is equivalent to MEM05004C Perform routine oxy acetylene welding

Application

This unit of competency defines the skills and knowledge required to prepare materials and perform routine oxy fuel gas welding of mild/low carbon steel and cast iron where the welding is not required to meet an Australian Standard or equivalent.

Where welding is required to meet AS 1554 General Purpose or equivalent codes, work health and safety (WHS) regulations and/or licensing requirements MEM05055 Weld using oxy fuel gas welding process should also be selected.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measuring equipment is required unit MEM12023 Perform engineering measurements should also be selected.

Where the selection and use of tools is required unit MEM18001 Use hand tools and unit MEM18002 Use power tools/hand held operations should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

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Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine job requirements**	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, sketches, job sheets or work instructions
2	**Prepare equipment for welding**	2.1	Check condition of gas handling equipment
		2.2	Assemble and set up fuel gas welding equipment according to SOPs
		2.3	Determine and set gas pressures
		2.4	Select consumables
3	**Prepare materials for welding**	3.1	Identify location of welds in accordance with job specifications
		3.2	Clean and prepare materials ready for welding
4	**Perform routine welding using oxy fuel gas**	4.1	Weld materials to job requirements
		4.2	Clean welds according to SOPs

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Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Fuel gases include one (1) or more of the following:	• acetylene • liquefied petroleum gas (LPG) • hydrogen
Materials include one (1) or more of the following:	• mild/low carbon steel • cast iron
Consumables include one (1) or more of the following:	• filler rods • fluxes
Welds include the following:	• butt • fillet
Preparation includes one (1) or more of the following:	• preheating • setting up jigs • fixtures • clamps • joint preparation
Fuel gas welding equipment includes the following:	• gas cylinders • hoses • blowpipes • tips and nozzles • regulators • flashback arrestors

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM05004C Perform routine oxy acetylene welding

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM05004 Perform routine oxy fuel gas welding

Modification History

Release 1. Supersedes and is equivalent to MEM05004C Perform routine oxy acetylene welding

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- cleaning and preparing materials for welding
- setting up:
  - gas cylinders
  - hoses
  - blowpipes
  - tips and nozzles
  - regulators
  - flashback arrestors
- selecting settings and consumables
- butt and fillet weld materials to comply with specifications
- cleaning welds according to SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- preparatory requirements
- equipment and equipment settings
- purpose of, and setting up requirements, of:
  - gas cylinders
  - hoses
  - blowpipes
  - tips and nozzles
  - regulators
  - flashback arrestors

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- fuel gas properties and applications
- weld characteristics.

Assessment Conditions

- Assessors must:
  - have vocational competency in performing routine oxy fuel gas welding at least to the level being assessed with relevant industry knowledge and experience
  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011,* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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MEM05006 Perform brazing and/or silver soldering

Modification History

Release 1. Supersedes and is equivalent to MEM05006C Perform brazing and/or silver soldering

Application

This unit of competency defines the skills and knowledge required to perform brazing (including braze welding) and/or silver soldering and includes the preparation of materials and equipment and the inspection of the completed work.

It applies to silver soldering and brazing using all grades of silver solder and braze.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measuring equipment is required unit MEM12023 Perform engineering measurements should also be selected.

Where the selection and use of tools is required see unit MEM18001 Use hand tools and unit MEM18002 Use power tools/hand held operations, should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

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Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine job requirements**	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, sketches, job sheets or work instructions
2	**Prepare heating equipment**	2.1	Select the correct process to meet the job specifications
		2.2	Ensure heating equipment is in safe working condition
		2.3	Assemble heating equipment and set up according to SOPs
		2.4	Determine and set gas pressures
3	**Prepare materials**	3.1	Select and prepare consumables
		3.2	Prepare materials using appropriate tools and techniques
		3.3	Assemble/align materials to meet specifications
		3.4	Identify distortion prevention measures and take appropriate action
		3.5	Undertake test run and verify
4	**Braze and/or silver solder**	4.1	Preheat materials as required
		4.2	Apply consumables using appropriate techniques

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Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.	
	4.3	Apply jointing material in appropriate quantities
	4.4	Anneal material where required
5 **Inspect joints**	5.1	Remove excess jointing materials
	5.2	Inspect joints and report/record inspection results according to SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Materials include one (1) or more of the following:
- ferrous
- non-ferrous

Fuel gases include one (1) or more of the following:
- acetylene
- liquefied petroleum gas (LPG)
- hydrogen

Heating equipment includes the following:
- gas cylinders
- hoses
- blowpipes
- tips and nozzles
- regulators

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This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

	• flashback arrestors
Consumables include one (1) or more of the following:	• fluxes (resin or powder) • all types of silver solder • brazing grades
Process includes one (1) or more of the following:	• brazing • braze welding • silver soldering

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM05006C Perform brazing and/or silver soldering

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM05006 Perform brazing and/or silver soldering

Modification History

Release 1. Supersedes and is equivalent to MEM05006C Perform brazing and/or silver soldering

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- checking condition of equipment
- setting up:
  - gas cylinders
  - hoses
  - blowpipes
  - tips and nozzles
  - regulators
  - flashback arrestors
- preparing to braze and/or silver solder by assembling/aligning materials in an appropriate manner and applying distortion prevention methods to meet specifications
- applying consumables and brazing and/or silver soldering ferrous and non-ferrous materials
- annealing material using appropriate techniques
- inspecting joints and removing excess jointing materials and recording the results.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- potential equipment faults
- reasons for selecting specific methods of assembly/alignment
- procedures for minimising distortion of the materials being brazed/braze welded/silver soldered
- procedures for assembling and setting up the specific heating equipment and reasons for selection
- reasons for selecting specific consumables

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- procedures for preheating the materials to be joined and precautions to be observed
- conducting test runs
- procedures for normalising the temperature of jointed materials and the consequences of inappropriate techniques
- typical applications of brazing/braze welding and silver soldering processes
- procedures for removing excess jointing material
- effects of the use of inappropriate techniques and quantities of jointing material on the performance of the jointed materials
- procedures for inspecting brazed/braze welded/silver soldered joints.

Assessment Conditions

- Assessors must:
  - have vocational competency in performing brazing and or silver soldering at least to the level being assessed with relevant industry knowledge and experience
  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011,* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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MEM05007 Perform manual heating and thermal cutting

Modification History

Release 1. Supersedes and is equivalent to MEM05007C Perform manual heating and thermal cutting

Application

This unit of competency defines the skills and knowledge required to perform manual heating, thermal cutting and gouging including the assembly and disassembly and operation of the equipment on a range of materials.

Where the selection and use of tools is required unit MEM18001 Use hand tools and unit MEM18002 Use power tools/hand held operations, should also be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Fabrication

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine job requirements**	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	**Select and set up heating and thermal cutting equipment**	2.1	Select cutting process and/or method appropriate for material
		2.2	Select and assemble appropriate accessories and equipment
		2.3	Ensure equipment is in safe working condition
		2.4	Set up equipment following SOPs
3	**Perform heating and thermal cutting**	3.1	Follow equipment start-up procedures and make adjustments as required
		3.2	Make appropriate cutting allowances
		3.3	Minimise wastage of materials when performing manual heating and thermal cutting
		3.4	Identify defects and take corrective action in accordance with SOPs
		3.5	Heat and cut material to specification
		3.6	Inspect shape/size/length of final product for compliance with specifications

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Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Cutting includes one (1) or more of the following:	• hand held • self-propelled straight line cutters
Methods include one (1) or more of the following:	• manual • automatic
Fuel gases include one (1) or more of the following:	• acetylene • liquefied petroleum gas (LPG) • hydrogen
Material includes various thicknesses and types of one (1) or more of the following:	• ferrous • non-ferrous • non-metallic
Equipment includes the following:	• gas cylinders • hoses • blowpipes • tips and nozzles • regulators • flashback arrestors

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM05007C Perform manual heating and thermal cutting

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM05007 Perform manual heating and thermal cutting

Modification History

Release 1. Supersedes and is equivalent to MEM05007C Perform manual heating and thermal cutting

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- selecting equipment appropriate to the material
- checking condition of equipment
- setting up:
  - gas cylinders
  - hoses
  - blowpipes
  - tips and nozzles
  - regulators
  - flashback arrestors
- operating equipment to cut materials making appropriate cutting allowances to ensure material is used in most economical way
- identifying defects and taking appropriate remedial action
- heating material to specification
- checking final product for compliance with specifications.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- cutting processes appropriate to various materials
- heating and cutting specifications
- purpose of, and setting up requirements, of:
  - gas cylinders
  - hoses
  - blowpipes

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  - tips and nozzles
  - regulators
  - flashback arrestors
- tools, equipment, techniques and procedures for heating and cutting
- potential equipment faults
- assembling procedures for equipment and accessories
- equipment pre-checks and operation
- procedures for adjusting heating and cutting equipment
- cutting allowances and reasons for applying them
- procedures and reasons for minimising waste material
- cutting defects and their causes and tools, equipment and techniques required to correct defects.

Assessment Conditions

- Assessors must:
  - have vocational competency in performing manual heating and thermal cutting at least to the level being assessed with relevant industry knowledge and experience
  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011,* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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MEM07005 Perform general machining

Modification History

Release 1. Supersedes and is equivalent to MEM07005C Perform general machining

Application

This unit of competency has been developed for Engineering Tradesperson – Mechanical apprenticeship training and the recognition of trade-level skills in non-computer numerical controlled (CNC) machining of ferrous and non-ferrous materials.

Where high level production machining applications are undertaken unit MEM07041 Perform production machining should be selected.

Where set-up and operation of electro-discharge machines (EDM) is required unit MEM07014 Perform electro-discharge machining (EDM) operations should also be selected.

Where machining is undertaken without undertaking any set up, including mounting of tools, setting of speeds, feeds and other operational parameters unit MEM07024 Operate and monitor machine and process and unit MEM07025 Perform advanced machine and process operation, should be selected as appropriate.

Where the selection and use of precision measurement is required unit MEM12003 Perform precision mechanical measurement should also be selected.

Where substantial marking out is required unit MEM12006 Mark off/out (general engineering) should also be selected.

Where the selection and use of power tools/hand held operations is required unit MEM18002 Use power tools/hand held operations should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 8

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Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools

Competency Field

Machine and process operations

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine job requirements**	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	**Determine sequence of operations**	2.1	Determine sequence of operations to meet job specifications
		2.2	Select appropriate material and establish datum, as required

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Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

3	**Select and mount tools**	3.1	Select appropriate tools for job, sharpen and shape, as required
		3.2	Mount and position tools to meet requirements
4	**Perform machining operations**	4.1	Transfer dimensions to determine machining parameters
		4.2	Set machining parameters to meet job requirements and maximise tool life
		4.3	Ensure work is securely held to avoid damage to product, and meet safety requirements
		4.4	Perform machining to produce product to meet specifications
		4.5	Carry out routine maintenance and adjustments, as required
5	**Check components**	5.1	Check components for compliance with specifications
		5.2	Rectify non-compliant product in accordance with SOPs as required

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

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Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Operations include one (1) or more of the following:	• parallel cutting • slotting • planing • drilling • knurling • cutting flats • non-precision surface grinding operations
Materials include one (1) or more of the following:	• ferrous • non-ferrous
Measuring instruments include one (1) or more of the following:	• micrometres • vernier calipers • calipers • steel rules • dividers • scribers
Tools include the following:	• cutting tools • tool holders
Machining parameters include one (1) or more of the following:	• speeds • feeds • stops • coolant and cutting lubricants
Machines include one (1) or more of the following:	• lathes • mills • planers • shapers • slotters • surface grinder

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This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Maintenance and adjustments include one (1) or more of the following:	• machining parameters • slide and collar adjustment • cleaning and lubrication

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM07005C Perform general machining

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM07005 Perform general machining

Modification History

Release 1. Supersedes and is equivalent to MEM07005C Perform general machining

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- planning a job including identifying job requirements from drawings, instructions or specifications and a sequence of operations
- identifying any required tooling, measuring equipment and accessories
- selecting and mounting required tooling
- selecting material and marking out, as required
- performing machining to meet specifications
- checking machined components for conformance to specifications and identifying adjustments to be made to settings/tooling
- rectifying non-compliant components
- carrying out routine maintenance and adjustments, as required.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- reasons for selecting the chosen sequence of operations
- methods of work holding for machining operations
- transferring dimensions, including establishing datum points/lines
- geometry of cutting tools for a range of materials and applications
- reasons for maintaining properly sharpened cutting tools
- principles underpinning machining operations
- selection of feeds and speeds to suit a range of materials and operations
- methods of mounting a range of cutting tools
- safety precautions associated with clamping materials, guards and shields
- tolerances and limits of size
- machine adjustment, lubrication and cleaning
- measurement techniques, tools and devices

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- tools, techniques and equipment for checking components for conformance to specifications and rectifying non-compliant components.

Assessment Conditions

- Assessors must:
  - *have vocational competency in performing general machining at least to the level being assessed with relevant industry knowledge and experience*
  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must include evidence of 320 hours of workplace practice associated with the skills of this unit in a functioning workplace.
- All aspects of competent application of the unit must be addressed including prerequisite competency units and associated workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Knowledge assessment may be either verbal or written but must adequately reflect the knowledge requirements of the unit and its prerequisites in a functioning workplace.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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MEM09002 Interpret technical drawing

Modification History

Release 1. Supersedes and is equivalent to MEM09002B Interpret technical drawing

Application

This unit of competency defines the skills and knowledge required to interpret technical drawings.

Technical drawings may utilise perspective, exploded views or hidden view techniques and may include symbol glossaries. Drawings are provided to AS 1100 Technical drawing or AS 1102 Graphical symbols and their equivalents from the full range of engineering disciplines.

Where any technical drawing, sketch, chart, diagram is only used as a technique for communication, then this unit does not apply: unit MEM12023 Perform engineering measurements or unit MEM16006 Organise and communicate information should be selected as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: **A**

Unit Weight: **4**

Pre-requisite Unit

MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Drawing, drafting and design

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1.	**Determine job requirements**	1.1 Follow standard operating procedures (SOPs)
		1.2 Comply with work health and safety (WHS) requirements at all times
		1.3 Identify job requirements from specifications, job sheets or associated work instructions
2.	**Interpret technical drawing**	2.1 Check drawing and version and validate against job requirements
		2.2 Recognise components and assemblies or objects
		2.3 Identify dimensions, instructions and material requirements
		2.4 Recognise symbols used in the drawing
		2.5 Compile list of required materials

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Drawing interpretation includes recognising the following:	• relationship between the views contained in the drawing • objects • units of measurement

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This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- dimensions of the key features
- symbols

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09002B Interpret technical drawing

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM09002 Interpret technical drawing

Modification History

Release 1. Supersedes and is equivalent to MEM09002B Interpret technical drawing

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- selecting, checking and validating technical drawing against job requirements or equipment
- interpreting technical drawing through recognition of components, assemblies, objects and symbols
- identifying dimensions
- applying drawing conventions appropriate to engineering discipline
- compiling a materials list.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- application of AS 1100 Technical drawing or AS 1102 Graphical symbols
- conventions used in technical drawings
- correct interpretation of instructions contained in drawings
- materials from which drawing object(s) are made and their features and manufacturing and assembly requirements.

Assessment Conditions

- Assessors must:
  - have vocational competency in interpreting technical drawings at least to the level being assessed with relevant industry knowledge and experience
  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011,* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires

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- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

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MEM11011 Undertake manual handling

Modification History

Release 1. Supersedes and is equivalent to MEM11011B Undertake manual handling

Application

This unit of competency defines the skills and knowledge required to lift and move materials manually and/or using basic manual handling equipment in a wide range of environments.

Maximum manual lifting weight is limited to Safe Work Australia recommendations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: **A**

Unit Weight: **2**

Pre-requisite Unit

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Materials handling

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Determine job requirements**	1.1 Follow standard operating procedures (SOPs)
		1.2 Comply with work health and safety (WHS) requirements at all times

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, job sheets or work instructions
2	**Lift materials manually**	2.1	Determine material weight correctly utilising most appropriate technique, and assess risks associated with lifting
		2.2	Undertake lifting techniques to Safe Work Australia recommended procedures and having regard to types of movement, methods, storage, height and position
3	**Move/shift materials manually**	3.1	Select appropriate equipment, as required
		3.2	Place material safely and securely on moving equipment
		3.3	Relocate material ensuring safety of personnel and security of material
		3.4	Unload material and place in a safe and secure manner

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Material weight includes	• determined using scales

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This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

one (1) or more of the following:	• interpreting signage
Lifting techniques include one (1) or more of the following:	• individual • team lifting • use of appropriate lifting equipment
Appropriate equipment includes one (1) or more of the following:	• hand trolleys • wheelbarrows • motorised/hand pallet trucks (not sit on) • hand carts • dedicated production or process lifting equipment • baskets, spreader bars, cradles or the like attached to lifting equipment

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM11011B Undertake manual handling

Links

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Assessment Requirements for MEM11011 Undertake manual handling

Modification History

Release 1. Supersedes and is equivalent to MEM11011B Undertake manual handling

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- assessing the risks associated with lifting materials manually and determining the most appropriate technique
- selecting and using the appropriate equipment to move/shift materials ensuring safety of personnel and security of material.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- manual handling techniques, including individual or team lifting
- appropriate equipment associated with move/shift materials
- hazards of incorrect procedures
- Safe Work Australia standards for manual handling.

Assessment Conditions

- Assessors must:
  - have vocational competency in undertaking manual handling at least to the level being assessed with relevant industry knowledge and experience
  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011,* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires

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- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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MEM12023 Perform engineering measurements

Modification History

Release 1. Supersedes and is equivalent to MEM12023A Perform engineering measurements

Application

This unit of competency defines the skills and knowledge required to perform measurements requiring straightforward use of mechanical measuring devices which incorporate visual inspections representing units of measurement and associated calculations in a range of manufacturing, engineering and related environments. Measurements may be expressed in metric or imperial units.

Electrical/electronic devices used are those not requiring the connection or disconnection of circuitry.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: **A**

Unit Weight: **5**

Pre-requisite Unit

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Measurement

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine job requirements**	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Identify job requirements from specifications, sketches, job sheets or work instructions
2	**Select appropriate device or equipment**	2.1	Determine measurement requirements from specifications
		2.2	Select appropriate device or equipment to achieve required outcome according to SOPs
3	**Obtain measurements using a range of measuring devices**	3.1	Use correct and appropriate measuring technique
		3.2	Obtain measurements accurately in a safe and effective manner
		3.3	Determine or verify dimensions using calculations, as required
4	**Maintain measuring devices**	4.1	Undertake routine care and storage of devices to manufacturers' specifications or SOPs
		4.2	Make routine adjustments to devices to maintain device accuracy
5	**Communicate measurements as required**	5.1	Record measurements accurately, as required
		5.2	Prepare freehand sketch which depicts required information, as required

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Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Specifications include one (1) or more of the following:	• drawings • sketches • job instructions • schematics • diagrams • reference manuals
Measuring devices include one (1) or more of the following:	• protractors • combination squares • set squares • dial indicators • thermometers • tapes • rules • micrometres • vernier-scaled measuring equipment
Calculations include one (1) or more of the following:	• addition • subtraction • multiplication • division • fractions • decimals **Note:** Calculations may be made using a calculator
Routine adjustments	• validating the device using simple zeroing or scale adjustment

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This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

include the following:

Measurements include one (1) or more of the following:	• length • squareness • flatness • angle • roundness • clearances • any other measurements that can be read off analogue, digital or other measuring device
Information includes one (1) or more of the following:	• dimensions • instructions • base line • datum points

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM12023A Perform engineering measurements

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM12023 Perform engineering measurements

Modification History

Release 1. Supersedes and is equivalent to MEM12023A Perform engineering measurements

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting measurement requirements from specifications
- selecting appropriate measuring device or equipment to achieve the required outcome
- obtaining measurements in a safe and effective manner and recording measurements, including preparing a freehand sketch which depicts required information, as required
- performing calculations to determine or verify dimensions
- storing and maintaining measuring devices including routine adjustments according to manufacturer's specifications or SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- correct application of a range of measuring devices
- correct and appropriate measuring technique for a range of measuring devices
- calculations, including addition, subtraction, multiplication, division, fractions and decimals
- manufacturer's or SOPs for handling and storing a range of measuring devices
- appropriate procedures for adjusting and zeroing a range of measuring devices, including scale adjustment
- appropriate methods of communicating measurements by drawings.

Assessment Conditions

- Assessors must:
  - have vocational competency in performing engineering measurements at least to the level being assessed with relevant industry knowledge and experience

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  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011,* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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MEM12024 Perform computations

Modification History

Release 1. Supersedes and is equivalent to MEM12024A Perform computations

Application

This unit of competency defines the skills and knowledge required to estimate approximate answers to arithmetical problems, carry out calculations involving percentages and proportions, and determine simple ratios and averages.

It also covers producing and interpreting simple charts and graphs in manufacturing, engineering or related environments.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: **A**

Unit Weight: **3**

Pre-requisite Unit

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Measurement

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Determine job requirements**	1.1 Follow standard operating procedures (SOPs)
		1.2 Comply with work health and safety (WHS)

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Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.	
		requirements at all times
	1.3	Identify job requirements from specifications, sketches, job sheets or work instructions
	1.4	Establish required calculation outcomes from job instructions
	1.5	Determine required calculation method to suit the application, including selection of relevant arithmetic operations and/or formulae
	1.6	Estimate expected results, including rounding off, as appropriate
2 **Perform calculations**	2.1	Apply calculation method
	2.2	Obtain answer and check against estimation to ensure it is correct
3 **Produce charts and graphs from given information**	3.1	Transpose data to produce charts or graphs
	3.2	Ensure charts or graphs reflect data on which they are based to meet specifications

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

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This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Calculations are performed using one (1) or more of the following:	• pen and paper • a calculator • tables • tablets • computers
Relevant sources include one (1) or more of the following:	• charts • graphs • diagrams • measurement data • reference manuals • specifications
Applications include computations associated with one (1) or more of the following:	• pressure • volume • temperature • heat • speed • power • elasticity • density • mass • force
Arithmetic operations include the following:	• application of subtraction, addition, multiplication and division • manipulation of decimals, fractions and mixed numbers and whole numbers • using formulas • determining percentages • calculation of proportions and ratios
Charts and graphs include one (1) or more of the following:	• simple histograms • control charts • pie charts

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM12024A Perform computations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM12024 Perform computations

Modification History

Release 1. Supersedes and is equivalent to MEM12024A Perform computations

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- obtaining and interpreting data from job instructions and relevant sources to establish required outcomes
- determining the appropriate calculation method to suit the application
- performing calculations and confirming answer/s
- producing and interpreting simple charts and graphs from given data.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- formulae applicable to the determination of perimeter, area and volume of simple geometric shapes and the reasons for using dimensions with the same units
- techniques and procedures for rounding off figures when estimating approximate answers
- features and use of mixed numbers, decimals, fractions and whole numbers
- procedures for carrying out calculations involving fractions and using each of the four basic rules of addition, subtraction, multiplication and division
- concept of percentage and procedures to be followed in converting a decimal and fraction to a percentage
- concepts and calculations of ratio and proportion
- scales applicable to the axes of the graphs or charts
- types of charts and/or graphs used in the individual's field of work
- upper and lower limits of acceptability applicable to data entered on a graph or chart
- trends indicated by the slope or gradient of a graph
- action to be taken when given trends occur or set limits are approached on graphs or charts
- procedures for drawing 'lines of best fit'
- trends indicated by the graphs or charts drawn.

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Assessment Conditions

- Assessors must:
  - have vocational competency in performing computations at least to the level being assessed with relevant industry knowledge and experience
  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011,* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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MEM13015 Work safely and effectively in manufacturing and engineering

Modification History

Release 1. New unit. Supersedes and not equivelant to MEM13014A Apply principles of occupational health and safety in the work environment, MEM14004A Plan to undertake a routine task, MEM15002A Apply quality systems, MEM15024A Apply quality procedures, MEM16007A Work with others in a manufacturing, engineering or related environment.

Application

This unit of competency defines the skills and knowledge required to work effectively in manufacturing and engineering work situations, including planning routine work and participating in and following work health and safety (WHS) procedures. The unit applies to working either individually or in a team situation and includes contributing to work-related group activities in a manufacturing or engineering workplace.

This unit covers WHS skills associated with carrying out routine operational activities safely and in compliance with legislative and regulatory requirements.

The unit covers the skills associated with participation in quality systems, communication and cooperation with others. The unit applies to workplaces with informal or formal quality management and improvement systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: **A**

Unit Weight: **2**

Pre-requisite Unit

Nil.

Competency Field

Work health and safety

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine job requirements**	1.1	Identify goals, objectives and task requirements and clarify with appropriate persons, where required
		1.2	Prioritise task requirements
2	**Review and modify plan**	2.1	Adjust timelines, priorities and other planning components to respond to contingencies, as necessary
		2.2	Re-examine results of work activity against the plan and identify possible improvements to future performance of work tasks
3	**Work effectively with others in the workplace**	3.1	Identify own role and responsibilities and relationship to other employees, including employees performing related/interdependent activities
		3.2	Identify supervisors and other sources of advice and assistance for own work
		3.3	Apply effective interpersonal skills to interact with others and contribute to activities and objectives
		3.4	Review and modify own work progress to complement the work of others
		3.5	Report own work progress to supervisors and where required to fellow employees using standard operating procedures (SOPs)
4	**Follow safe work practices**	4.1	Check for and identify hazards in the work area before and during work
		4.2	Follow procedures for avoiding or controlling hazards already identified in instructions, signage or other workplace communication
		4.3	Identify and report risks and hazards not covered by procedures

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
		4.4	Select, use and maintain relevant personal protective equipment (PPE) by procedures, as required
		4.5	Recognise emergency situations and take appropriate initial emergency action
		4.6	Follow procedures for responding to emergencies
		4.7	Report incidents, injuries and other WHS non-conformances according to procedures
5	**Work within a quality system**	5.1	Follow instructions and procedures and perform duties in accordance with standard operating procedures or quality system requirements
		5.2	Ensure conformance of product and process to specifications
		5.3	Report defects and non-conformance to specifications according to procedures
		5.4	Participate in process improvement procedures, where required
6	**Participate in workplace health and safety procedures**	6.1	Identify workplace health and safety policies and procedures relevant to own work and work area
		6.2	Identify relevant WHS managers and representatives for own work area
		6.3	Provide input to minimise hazards in work area in line with organisation WHS procedures and participative arrangements

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

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Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Quality systems include one (1) or more of the following

- quality planning
- quality assurance
- quality control
- quality improvement procedures and processes

Task requirements include one (1) or more of the following:

- timeframe
- quality requirements
- outcome and performance requirements
- job history
- checks
- reporting requirements
- tools and equipment
- materials and parts
- supporting documents

Specifications include one (1) or more of the following:

- task lists
- instructions
- manufacturer manuals
- diagrams and schematics
- sketches
- parts lists
- SOPs

Planning includes one (1) or more of the following:

- preparing a plan to complete the task
- organising task into manageable steps including appropriate order and timing
- monitoring the progress of processes related to own responsibilities
- applying relevant WHS instructions
- collecting, sorting, recording results of work
- seeking advice and guidance on setting priorities and timeframes

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This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- seeking feedback from supervisor, trainer or mentor

Unit Mapping Information

Release 1. New unit. Supersedes and not equivelant to MEM13014A Apply principles of occupational health and safety in the work environment, MEM14004A Plan to undertake a routine task, MEM15002A Apply quality systems, MEM15024A Apply quality procedures, MEM16007A Work with others in a manufacturing, engineering or related environment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM13015 Work safely and effectively in manufacturing and engineering

Modification History

Release 1. New unit. Supersedes and not equivelant to MEM13014A Apply principles of occupational health and safety in the work environment, MEM14004A Plan to undertake a routine task, MEM15002A Apply quality systems, MEM15024A Apply quality procedures, MEM16007A Work with others in a manufacturing, engineering or related environment.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and avoiding or controlling hazards
- reporting hazards, incidents, injuries and other work health and safety (WHS) non-conformances following SOPs
- recognising and responding to emergencies following SOPs
- identifying and obtaining, instructions and information on job requirements, including one or more of the following:
  - verbal or written job instructions
  - specifications
  - SOPs
  - charts
  - lists
- identifying and responding to contingencies, including:
  - equipment breakdowns
  - non-conforming components
  - safety hazards
- recording information into proforma workplace documents, including:
  - production tally forms
  - quality control forms
  - safety incident forms
- performing assigned tasks and checking outcome of own work for conformance to specifications
- identifying own responsibilities within the workplace quality system
- giving and receiving feedback on own and group work
- seeking assistance from supervisors and mentors.

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Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use and application of personal protective equipment
- basic quality system terminology and concept, including:
  - quality assurance
  - quality control
  - quality improvement
- procedures to be followed in performing own work
- objectives, requirements and specifications to which the individual's work is to comply
- costs and consequences of poor quality
- effective interpersonal skills:
  - effective listening
  - basic speaking skills
  - use of workplace terminology and jargon
  - giving and receiving feedback
  - checking and clarifying task-related information
  - verbal, visual and written instructions
  - appropriate modes and methods of communication
- barriers to effective communication
- sources of technical expertise/assistance
- hazards and control measures associated with workplace activities.

Assessment Conditions

- Assessors must:
  - have vocational competency in working safely and effectively in manufacturing and engineering at least to the level being assessed with relevant industry knowledge and experience
  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011,* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills

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- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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MEM14006 Plan work activities

Modification History

Release 1. Supersedes and is equivalent to MEM14005A Plan a complete activity

Application

This unit of competency covers the skills and knowledge required to plan familiar work activities, whilst following established procedures and work health and safety (WHS) policies and procedures of the organisation.

Planning is undertaken by the individual performing the work. Individual plan components may require modification and prioritising to meet job requirements or to respond to unforeseen circumstances.

Where computations are required to be performed unit MEM12024 Perform computations should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: **A**

Unit Weight: **4**

Pre-requisite Unit

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Planning

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine job requirements**	1.1	Follow standard operating procedures (SOPs)
		1.2	Identify outcomes and objectives and clarify with appropriate persons
		1.3	Obtain and clarify relevant specifications and procedures
		1.4	Identify and prioritise individual components of the plan
		1.5	Select and use planning tools and techniques according to the requirements of the work
		1.6	Check the plan for accuracy and relevancy to job requirements
2	**Modify plan components**	2.1	Modify the plan components, as necessary, to respond to unforeseen developments
		2.2	Review the outcome of the work activity and, where necessary, identify future improvements to the plan
3	**Follow WHS requirements**	3.1	Comply with WHS requirements at all times
		3.2	Identify WHS hazards and risks and implement appropriate risk control measures in accordance with SOPs
		3.3	Select, use and maintain appropriate personal protective equipment (PPE) in accordance with SOPs
		3.4	Raise WHS issues with designated personnel in accordance with SOPs
		3.5	Report WHS related actions and incidents according to SOPs

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Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Plan components include one (1) or more of the following:	• resources • tools and equipment • materials and parts • overall timeframe • job history • quality requirements • criteria for acceptable completion • checks and tests • outcome and performance requirements • WHS requirements
Specifications include one (1) or more of the following:	• task lists • instructions • manufacturer manuals • diagrams and schematics • technical drawings and sketches • parts lists • computer records
Planning techniques and tools include one (1) or more of the following:	• scheduling • time management • brainstorming • setting goals and defined outcomes • prioritising • review and evaluation strategies
Risk control measures	• eliminate the hazard

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This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

include one (1) or more of the following:

- substitute the hazard with a safer alternative
- isolate the hazard
- use engineering controls to reduce the risk
- use training to reduce the risk
- use PPE

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM14005A Plan a complete activity

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM14006 Plan work activities

Modification History

Release 1. Supersedes and is equivalent to MEM14005A Plan a complete activity

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- planning a work activity using appropriate planning tools and techniques whilst following established procedures, including work health and safety (WHS) requirements
- checking the plan to ensure accuracy and conformance and modifying the plan components, as necessary, to overcome any unforeseen difficulties or developments
- identifying hazards and implementing appropriate risk control measures and procedures
- selecting, using and maintaining relevant personal protective equipment (PPE)
- evaluating the effectiveness of risk controls measures
- providing proforma WHS reports in accordance with SOPs, as required.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of PPE
- relevant specifications
- sources of advice relating to the objectives, requirements and specifications
- timeframe for activity completion
- quality requirements of the product or service
- techniques and reasons for prioritising of each step in a plan
- modifications that can be made to the plan to respond to unforeseen developments
- risk control measures
- reporting requirements for accidents, incidents and other non-conformances with WHS procedures.

Assessment Conditions

- Assessors must:
  - have vocational competency in planning work activities in a manufacturing and engineering environment at least to the level being assessed with relevant industry knowledge and experience

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  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011,* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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MEM16006 Organise and communicate information

Modification History

Release 1. Supersedes and is equivalent to MEM16006A Organise and communicate information

Application

This unit of competency covers the skills and knowledge required to access, organise and communicate information related to production, maintenance or associated processes or tasks that apply in manufacturing, engineering or related environments.

For accessing and recording of data requiring system knowledge and judgement, Unit MEM16008 Interact with computing technology should be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: **A**

Unit Weight: **2**

Pre-requisite Unit

MEM13015 Work safely and effectively in manufacturing and engineering

Competency Field

Communication

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Access information**	1.1	Determine information requirements of tasks and access relevant information from a range of sources
		1.2	Recognise and use workplace terminology correctly

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
2	**Organise and analyse information**	2.1	Interpret information and organise in accordance with work requirements
		2.2	Determine relevance and implications for immediate work requirements
3	**Communicate organised information using established workplace methods**	3.1	Identify purpose of communication and appropriate communication method
		3.2	Communicate information using established workplace methods

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Range of sources include using one (1) or more of the following:

- job instructions
- specifications
- standard operating procedures (SOPs)
- charts
- lists
- documents
- computer data
- drawings
- sketches
- tables

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This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

- technical manuals and/or charts
- other applicable reference material

Determining relevance of information includes one (1) or more of the following:

- checking relevance of information to own work
- selecting task relevant information from a larger document or from a diagram
- preparing an opinion based on analysis of simple facts
- expressing an opinion on the cause of faults

Workplace terminology refers to one (1) or more of the following:

- equipment
- processes
- workplace areas
- staff
- procedures

Established workplace methods include using one (1) or more of the following:

- proforma reports
- data entry
- verbal
- drawings

Purpose of communication includes one (1) or more of the following:

- simple incident/non-conformance report
- maintenance request
- production records
- material usage records
- work records
- other standard workplace records

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM16006A Organise and communicate information

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM16006 Organise and communicate information

Modification History

Release 1. Supersedes and is equivalent to MEM16006A Organise and communicate information

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- accessing and recording relevant information from a range of sources
- recognising and using workplace appropriate terminology
- reading, interpreting and following information in workplace documentation
- checking and clarifying information
- organising, categorising and sequencing information
- communicating using appropriate methods and procedures for a variety of situations.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- types of information relevant to the workplace and required tasks
- terminology used in the workplace relevant to own work
- available sources of information
- information analysis techniques appropriate to tasks and position
- methods of categorising and organising information including correct sequencing of information
- methods of recording and communicating information.

Assessment Conditions

- Assessors must:
  - have vocational competency in organising and communicating information at least to the level being assessed with relevant industry knowledge and experience

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  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011,* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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MEM18001 Use hand tools

Modification History

Release 1. Supersedes and is equivalent to MEM18001C Use hand tools

Application

This unit of competency defines the skills and knowledge required to use a range of hand tools for a variety of general engineering applications.

This unit should not be selected if the hand tool is dedicated to a single operation or machine or when a machine-specific/customised tool is used.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measuring equipment is required unit MEM12023 Perform engineering measurements should also be selected.

Where the selection and use of power tools/hand held operations is required unit MEM18002 Use power tools/hand held operations should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: **A**

Unit Weight: **2**

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

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Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine job requirements**	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	**Use hand tools for general engineering applications**	2.1	Select hand tools appropriate to the task requirements
		2.2	Use hand tools to produce outcomes that meet job specifications
		2.3	Identify unsafe or faulty tools and mark for repair according to designated procedures before, during and after use
		2.4	Undertake routine maintenance of tools using engineering principles, tools, equipment and procedures
		2.5	Store hand tools safely in appropriate location according to procedures and manufacturers' recommendations

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

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Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Hand tools include one (1) or more of the following:	• hacksaws • hammers • punches • screwdrivers • sockets • wrenches • scrapers • chisels • gouges • wood planes • files of all cross-sectional shapes and types • hand held taps and dies
Applications include one (1) or more of the following:	• adjusting • dismantling • assembling and finishing of items or components • finishing, cutting, scraping of metallic and non-metallic material to size and shape • tapping/retapping and threading/rethreading new/damaged threads
Drawings include one (1) or more of the following:	• drawings and sketches not covered by AS 1100 Technical drawing or AS 1102 Graphical symbols for electrotechnical documentation, and their equivalents • work specifications that include graphic representations that do not require interpretation
Job specifications include one (1) or more of the following:	• finish • tension • size • shape
Routine maintenance includes one (1) or more of the following:	• cleaning • lubricating • tightening • simple tool repairs • adjustments

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18001C Use hand tools

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM18001 Use hand tools

Modification History

Release 1. Supersedes and is equivalent to MEM18001C Use hand tools

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- selecting and using hand tools to produce the desired outcome to job specifications
- following designated procedures for dealing with unsafe or faulty tools
- undertaking routine maintenance and cleaning of hand tools, including storage.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- features and applications of different hand tools used in a general engineering context, including hacksaws, hammers, punches, screwdrivers, sockets, wrenches, scrapers, chisels, gouges, wood planes and files of all cross-sectional shapes and sizes
- common faults and/or defects in hand tools
- procedures for marking unsafe or faulty tools for repair
- routine maintenance requirements for a range of hand tools, including lubricating, tightening, simple tool repairs and adjustments using engineering principles and relevant equipment
- storage location and procedures for a range of hand tools.

Assessment Conditions

- Assessors must:
  - have vocational competency in using hand tools at least to the level being assessed with relevant industry knowledge and experience
  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011,* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires

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- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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MEM18002 Use power tools/hand held operations

Modification History

Release 1. Supersedes and is equivalent to MEM18002B Use power tools/hand held operations

Application

This unit of competency defines the skills and knowledge required to use a range of hand held power tools and fixed power tools for hand held operations used in a variety of general engineering applications.

This unit should not be selected if the power tools used are dedicated to an operation or machine, e.g. nut-runner, air drill and power driver.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measuring equipment is required unit MEM12023 Perform engineering measurements should also be selected.

Where the selection and use hand tools is required unit MEM18001 Use hand tools should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: **A**

Unit Weight: **2**

Pre-requisite Unit

MEM11011 Undertake manual handling

MEM13015 Work safely and effectively in manufacturing and engineering

MEM16006 Organise and communicate information

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Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine job requirements**	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	**Use power tools for general engineering applications**	2.1	Select power tools appropriate to the task requirements
		2.2	Use power tools for a determined sequence of operations to produce desired outcomes to job specifications
		2.3	Identify unsafe or faulty tools and mark for repair before, during and after use according to SOPs
		2.4	Undertake operational maintenance of tools according to principles, techniques and SOPs
		2.5	Store power tools safely in appropriate location according to manufacturers' recommendations and SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

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Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Power tools include one (1) or more of the following:	• electric or pneumatic/hydraulic drills • grinders • jigsaws • nibblers • cutting saws • sanders • planers • routers • pedestal drills • pedestal grinders
Power tool operations include one (1) or more of the following:	• clamping • alignments • adjustments
Applications include one (1) or more of the following:	• loosening and fastening items or components • shaping, finishing, cutting, grinding of metallic and non-metallic materials and/or tool bits to size and shape
Drawings include one (1) or more of the following:	• drawings and sketches not covered by AS 1100 Technical drawing or AS 1102 Graphical symbols for electrotechnical documentation, and their equivalents • work specifications that include graphic representations that do not require interpretation
Clamping includes one (1) or more of the following:	• multigrips • vices • jigs and fixtures • clamps
Job specifications include one (1) or more of the following:	• finish • size • shape
Operational maintenance includes one (1) or more of the following:	• cleaning • lubricating • tightening

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Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18002B Use power tools/hand held operations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM18002 Use power tools/hand held operations

Modification History

Release 1. Supersedes and is equivalent to MEM18002B Use power tools/hand held operations

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- selecting and using a range of hand held and fixed power tools for a variety of general engineering applications
- following designated procedures for dealing with unsafe or faulty power tools
- undertaking routine maintenance and cleaning of power tools, including storage.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- features and application of different power tools
- clamping/securing methods
- adjustments/alignments to a range of power tools
- common faults and/or defects in power tools
- procedures for marking unsafe or faulty power tools for repair
- routine maintenance requirements and cleaning of a range of power tools
- storage location and procedures of a range of power tools.

Assessment Conditions

- Assessors must:
  - have vocational competency in using power tools/hand held operations at least to the level being assessed with relevant industry knowledge and experience
  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011,* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires

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- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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MEM24001B Perform basic penetrant testing

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers performing basic penetrant testing procedures in a range of industrial applications.

Application of the Unit

Application of the unit	This unit applies to basic penetrant testing techniques on fabrications, structures and components across a wide range of industries and restricted to basic visible dye and/or process penetrant line methods. The work can relate to scheduled and unscheduled maintenance activities, using general tools, specific penetrant testing equipment as specified in maintenance documentation, testing procedures or operator instructions. Actual and potential defects are to be considered, together with ongoing abnormalities in fabrications, components and structures. Penetrant testing is performed on critical component or structural zones. All testing must be completed with particular attention to personal safety and OH&S regulations. Certification against Australian standards may be achieved where assessment in this unit of competency is carried out in conjunction with an examining authority as described in ISO 9712. Materials and chemicals which are subject to codes and regulations - for example, chemicals, explosives, solvents, dangerous materials, acids, or noxious waste products - must be subject to safe work habits and must be stored and used in accordance with safe work practices. This unit should not be selected when Unit MEM24002B

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	(Perform penetrant testing) has already been selected. Where power tools are required, Unit MEM18002B (Use power tools/hand held operations) should also be selected. **Band**: **A** **Unit Weight**: **2**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM18001C	Use hand tools

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare inspection areas for basic penetrant testing	1.1. Inspection areas are cleaned and prepared for testing using appropriate procedures and materials. 1.2. Preparation processes are carried out in accordance with the relevant procedures and OH&S requirements. 1.3. Inspection areas are visually assessed and obvious discontinuities are identified.
2. Perform basic penetrant testing	2.1. Nominated test is identified from standard operating procedures. 2.2. Test equipment is prepared in accordance with standard operating procedures. 2.3. Test media is selected and applied in accordance with workplace practices and specifications. 2.4. Penetrant test is carried out in accordance with relevant work instructions and OH&S requirements. 2.5. Penetrant testing equipment is maintained and stored in accordance with standard operating procedures and OH&S requirements.
3. Report the results of penetrant test(s)	3.1. Basic indications are checked and defects are identified in accordance with enterprise standards and/or procedures. 3.2. Basic indications are confirmed in accordance with enterprise standards and/or procedures. 3.3. Test results are reported in accordance with enterprise standards and/or procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • preparing inspection areas • identifying discontinuities • applying procedures

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REQUIRED SKILLS AND KNOWLEDGE
• applying test media • applying principles of penetrant testing techniques • identifying defects • reading and interpreting routine information on written job instructions, specifications and standard operating procedures. • following oral instructions • entering routine and familiar information onto proformas and standard workplace forms
Required knowledge
Look for evidence that confirms knowledge of: • cleaning and preparation processes • precleaning methods and their areas of use - solvents, vapour degrease, etching, detergents, paint removers, mechanical methods • consequences of incorrect preparation • procedures and OH&S requirements in relation to the preparation process • basic concepts and principles of NDT; general terms, purpose of NDT and areas of application of NDT • scope and basic description of test • general properties of penetrants - penetrability, removability, visibility • emulsifier types • developer types • use of standard test panels • established inspection procedures and techniques • types of discontinuities and their consequences • procedure for carrying out penetrant testing • penetrant application • dwell times • penetrant removal • developer application • dry powder • development time • factors affecting indications • non-relevant indications • post-cleaning methods and their areas of use • basic maintenance and storage procedures for testing equipment • OH&S requirements including storage requirements • definition of a defect and common basic defects • methods/procedures for reporting test results

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to perform basic penetrant testing. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with performing basic penetrant testing or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures,

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EVIDENCE GUIDE	
	product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Preparation processes	Surface cleaning and drying
Obvious discontinuities	Observed changes in material homogeneity
Reported	Accurate identification of location and size of discontinuities

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

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Competency field

Competency field	Non-destructive testing

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MEM27004 Maintain and repair engine lubrication systems

Modification History

Release 1. Supersedes and is equivalent to MEM18028B Maintain engine lubrication systems

Application

This unit of competency defines the skills and knowledge required to assess lubrication system operations and repair or replace faulty components.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: **A**

Unit Weight: **2**

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18055	Dismantle, replace and assemble engineering components

Competency Field

Fixed and mobile plant

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine job requirements**	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	**Assess lubrication system operation**	2.1	Identify lubrication system and lubricant specifications prior to any testing
		2.2	Undertake system checks safely and to prescribed procedures
		2.3	Assess lubrication system operation, including condition and appropriateness of lubricant fluid, integrity of lubrication system and condition of components
		2.4	Determine flows, pressures and temperatures and record
		2.5	Identify leaks and any sources of contamination
		2.6	Isolate faults to component level using test equipment and determine appropriate corrective action
		2.7	Evaluate results of spectrographic or laboratory analysis and make recommendations regarding adjustments to future maintenance activities
		2.8	Assess auxiliary lubrication systems for correct operation
3	**Rectify faulty components**	3.1	Determine component wear and clearances using appropriate test equipment and manufacturer recommendations
		3.2	Select replacement components using manufacturers' data

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Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	3.3 Remove components and refit to engine
	3.4 Make final adjustments that bring system in line with specifications
	3.5 Record test and rectification activities
	3.6 Ensure engine is free of lubricant leaks after rectification work is carried out

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Faults include one (1) or more of the following:	• low or high pressure • low or high temperature • contamination • excessive or too little consumption/flow • leaks • use of incorrect lubricant
Test equipment includes one (1) or more of the following:	• pressure/temperature gauges • flow meters
Adjustments include setting one (1) or more of the following valves	• bypass • regulating • relief

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This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

to specified pressures or flows:

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18028B Maintain engine lubrication systems

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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Assessment Requirements for MEM27004 Maintain and repair engine lubrication systems

Modification History

Release 1. Supersedes and is equivalent to MEM18028B Maintain engine lubrication systems

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, charts, lists, drawings and service documents prior to any testing on engine lubrication systems
- conducting operational checks of engine lubrication system and determining and recording oil flows, pressures and temperature using appropriate test equipment
- identifying faults of engine lubrication system and determining corrective action
- obtaining and interpreting the results of lubricating oil tests and making recommendations to future maintenance activities
- checking auxiliary lubrication systems for correct operation in accordance with specifications
- undertaking calculations and numerical operations for maintaining engine lubrication systems
- checking lubrication system components for wear and clearances using appropriate test equipment to manufacturer specifications
- removing/refitting and adjusting lubrication system components and make final adjustments to bring system in line with specifications
- recording/reporting test and work activities.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- operation of the lubrication system and procedures for testing/checking lubrication
- tests to be undertaken and equipment and techniques to be used to determine oil flows, pressures and temperatures
- procedures for:
  - recording lubrication system test results
  - analysing lubricating oil samples and reasons that apply

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    - removing/replacing lubrication system components
    - adjusting lubrication systems
    - recording test and repair activities
    - checking lubrication systems for leaks
- specifications of the lubrication system components and appropriate corrective action for faulty components
- characteristics of lubricants and application of a variety of lubricants
- likely causes of a range of out of specification test results and appropriate corrective action to be taken
- implications of out of specification test results on maintenance schedules and requirements
- reasons for installing auxiliary lubrication systems on diesel plant and equipment
- operation of the auxiliary lubrication system
- measuring equipment/techniques used to determine lubrication system component wear and clearances.

Assessment Conditions

- Assessors must:
    - have vocational competency in maintaining engine lubrication systems at least to the level being assessed with relevant industry knowledge and experience
    - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011,* its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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MEM30012A Apply mathematical techniques in a manufacturing engineering or related environment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers applies the *concepts of mathematics* to appropriate and simple engineering situations within the individual's area of engineering expertise.

Application of the Unit

Application of the unit	This unit applies to technician level work that requires basic algebraic, trigonometric and statistical knowledge and skill. **Band**: **0** **Unit Weight**: **4**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

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Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Use concepts of arithmetic in the solution of engineering problems	1.1. Units of physical quantities are converted to facilitate engineering calculations. 1.2. Calculations are performed to solve problems involving rational and irrational numbers. 1.3. Scientific notation is used to represent numbers. 1.4. Calculations are checked for reasonableness using estimating and approximating techniques.
2. Solve engineering problems involving algebraic expressions with one independent variable	2.1. Algebraic expressions are manipulated using mathematical operations in their correct order.
3. Use two-dimensional geometry to solve practical problems	3.1. Angles expressed in degrees are correctly converted to radians and vice versa. 3.2. The perimeter, area, length and angles of a range of two-dimensional figures are correctly calculated. 3.3. The volume and surface area of complex figures are correctly calculated. 3.4. Points identified in terms of cartesian coordinates can be converted to polar coordinates and vice versa.
4. Use trigonometry to solve practical	4.1. Basic trigonometry functions are used to calculate the lengths of the sides of right-angled triangles.

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ELEMENT	PERFORMANCE CRITERIA
problems	4.2. Inverse trigonometry functions are used to determine angles in a right-angled triangle given the lengths of two sides. 4.3. The sine rule is used to determine the lengths of the sides of acute and obtuse angled triangles given one side and two angles. 4.4. The cosine rule is used to determine the lengths of the sides of acute and obtuse angled triangles given two sides and one angle.
5. Graph linear functions	5.1. Linear functions are solved graphically and equations of straight lines are determined from the slope and one point, or two points. 5.2. Two linear functions are solved simultaneously both algebraically and geometrically. 5.3. The length and mid point of a line segment are determined.
6. Solve quadratic equations	6.1. Quadratic equations are solved. 6.2. Simultaneous linear and quadratic equations are solved.
7. Perform basic statistical calculations	7.1. Mean, median and mode are calculated from given data. 7.2. Standard deviation is calculated and interpreted employing graphical representation.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills

Look for evidence that confirms skills in:
• using and applying mathematical formulas:
  • logical thinking
  • problem solving
  • calculating
  • applying statistics

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REQUIRED SKILLS AND KNOWLEDGE
• using computer numerical methods • drawing graphs
Required knowledge
Look for evidence that confirms knowledge of: • transposing and evaluating formulae • polynomials • straight line coordinate geometry • introduction to indices • introduction to trigonometry • circular functions • trigonometry of oblique triangles • trigonometric identities • introduction to functions and their graphs

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to apply mathematical skills and knowledge to simple engineering applications. Evidence from tasks and projects should/may be used to complement and demonstrate integration of competency.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic

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EVIDENCE GUIDE	
	workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with applying mathematical concepts to engineering applications, or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Concepts of mathematics	Include arithmetic, algebraic expressions with one independent variable, two-dimensional geometry, trigonometry, linear functions, basic quadratic functions, basic statistical methods

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RANGE STATEMENT	
Correct order	Refers to the correct procedure when expanding brackets, factorising algebraic expressions, factorising quadratic expressions, simplifying algebraic fractions, transposing formulae, solving simple one variable equations, finding the quotient and remainder given a linear division
Complex figures	May include cones, pyramids, spheres, frustums and intersections of figures singularly or in combination

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

Competency field

Competency field	Engineering technician

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MSFGG3039 Manually move glass

Modification History

Release 1. Supersedes and is not equivalent to MSFGG2005 Apply basic glass handling, and, MSFGG3001 Store and handle glass.

Application

This unit describes the skills and knowledge required to plan for and move sheets of glass by hand, both individually and as part of a team. Movement of glass may be within a glass workplace or between the workplace and another site.

This unit applies to glass processing workers and glaziers working in accordance with established procedures.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

N/A

Unit Sector

Glass and Glazing

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for glass handling	1.1 Read instructions and identify the type and quantity of glass to be relocated 1.2 Identify and follow work health and safety requirements using all required personal protective equipment throughout the work 1.3 Identify sheet glass to be moved and estimate or calculate weight, shape, points of balance, and dimensions 1.4 Identify risks to self, others, material and equipment arising from required lifting, load carrying, set down or movement of glass 1.5 Identify the need for equipment or team lifting based on nature of

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	glass and level of risk
2. Plan glass movement	2.1 Identify destination for glass and determine routes to be followed 2.2 Compare required clearances to available space and make any required adjustments 2.3 Plan process for relocating glass, and include contingency measures for potential difficulties 2.4 Check proposed process against advisory standards and workplace procedures for compliance
3. Relocate glass	3.1 Check glass for imperfections and damage prior to movement 3.2 Lift, lower and carry glass, in accordance with approved local work health and safety codes and workplace procedures 3.3 Coordinate team lifting tasks in accordance with approved local work health and safety codes and workplace procedures 3.4 Follow planned process and route and relocate glass without damage to material, personnel or equipment 3.5 Attach required labels and store glass in accordance with workplace procedures ensuring there are no projections 3.6 Check relocation against work requirements, and report any differences
4. Complete work	4.1 Clean, maintain and store handling equipment in accordance with workplace procedures 4.2 Accurately complete required workplace documentation

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

No equivalent unit.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0601ab95-583a-4e93-b2d4-cfb27b03ed73

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Assessment Requirements for MSFGG3039 Manually move glass

Modification History

Release 1. Supersedes and is not equivalent to MSFGG2005 Apply basic glass handling, and, MSFGG3001 Store and handle glass.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- completed each of the following in accordance with all safety and manual handling procedures on at least 1 occasion:
  - individual movement of annealed equal to or above 1.2 m^2
  - individual movement of laminated glass equal to or above 1.2 m^2
  - team movement of annealed glass equal to or above 4.5 m^2
  - team movement of laminated glass equal to or above 4.5 m^2
- moved glass in the following contexts:
  - loading and unloading of trucks
  - between trolleys and work benches.
  -

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- key information from work health and safety regulations relating to manual tasks and national code of practice:
  - role and responsibilities of the employer and employees in relation to manual handling safety
  - manual handling techniques that support safe work practice:
    - preparing the load
    - preparing the environment
    - using the stronger muscles in the legs where possible, rather than spinal muscles
    - maintaining a neutral spine when lifting and carrying
    - using two hands to lift or carry
    - keeping the load close to the body and centre of gravity
    - avoiding lifting objects above shoulder height
    - minimising repetitive movements
    - positions not held for long periods of time
    - avoiding twisting by repositioning feet while turning

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- mathematical procedures for calculation of glass weight
- glass manual handling:
  - quality, characteristics and behaviour of glass sheet when lifted and moved
  - risks and hazards
  - workplace safety system requirements
  - work flow requirements
  - principles and techniques of freefalling glass
  - the types of problems that may occur and how to avoid and respond
  - specific considerations when:
    - loading and unloading trucks
    - moving between trolleys and/or stillages, work benches and racks
- types, uses and limitations of tools and equipment used to support manual handling of glass
- features of glass sheet storage systems
- processes and communication protocols for team lifting
- workplace documentation requirements for glass movement.
-

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources:
  - glass storage and handling area
  - trolleys and/or stillages
  - work benches
  - racks
  - glass sheet to be relocated
  - safety and personal protective equipment
  - work orders
  - workplace procedures.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0601ab95-583a-4e93-b2d4-cfb27b03ed73

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MSFUP3001 Apply traditional foundations to upholstered furniture

Modification History

Release 1 - New unit of competency

Application

This unit of competency covers applying traditional upholstery foundations to upholstered furniture.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Competency Field

Unit Sector

Upholstery

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Plan operation	1.1	Work order or instructions are used to confirm type of traditional furniture foundations to be applied
		1.2	Work health and safety (WHS) requirements, including personal protection needs, are observed throughout the work
		1.3	Attaching methods are identified and fitting sequence is determined
		1.4	Suitable work area is selected and prepared
		1.5	Tools and hardware for the application of the foundation are selected and checked for safe operation

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		1.6	Traditional foundation components are selected as required
2	Prepare and attach traditional foundation	2.1	Mounting points are measured and marked on the frame, as required
		2.2	Traditional foundation is positioned and appropriate fasteners are used to secure it to the item
		2.3	Appropriate fasteners are used to secure the traditional foundation, as required
		2.4	The applied foundation is inspected for fit, finish and quality with those requiring reworking/refitting being tagged for further reprocessing or recycling/disposal in accordance with workplace practices
		2.5	Process is monitored and conditions which may affect quality standards are noted
		2.6	Variations to normal activities are reported in accordance workplace procedures
		2.7	Authorised changes in standard operating procedures and work order or instructions are implemented
3	Complete work	3.1	Workplace documentation, including stock usage, is completed in accordance with workplace procedures
		3.2	Faulty and/or defective equipment is tagged and reported in accordance with workplace procedures
		3.3	Waste and scrap are removed in accordance with workplace procedures
		3.4	Tools and equipment used are cleaned, inspected for serviceable condition and stored appropriately in accordance with workplace procedures
		3.5	Equipment is maintained and work area is cleaned in accordance with workplace procedures

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Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency. Detail on appropriate performance levels for each furnishing unit of competency in reading, writing, oral communication and numeracy utilising the Australian Core Skills Framework (ACSF) are provided in the Furnishing Training Package Implementation Guide.

Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Range is restricted to essential operating conditions and any other variables essential to the work environment.

Unit context includes:

- WHS requirements, including legislation, building codes, material safety management systems, hazardous and dangerous goods codes, and local safe operating procedures or equivalent
- work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling procedures and organisation insurance requirements
- work requires individuals to demonstrate some discretion, judgement and problem solving

Tools and equipment include:

- tape measure
- web strainer
- scissors
- upholstery hammer
- tack lifter
- staple gun
- pincers
- long-nose pliers

Materials include:

- webbing
- coil springs
- flock
- wadding
- coconut fibre
- bridle
- bridle ties
- solid timber base
- padded frames
- hard edge
- hessian

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	• calico • lacing twine • mattress twine

Personal protective equipment includes:	• that prescribed under legislation, regulations and enterprise policies and practices:
	  • safety glasses/goggle
	  • hair nets
	  • ear muffs/plugs
	  • gloves
	  • footwear and protective clothing

Information and procedures include:	• workplace procedures relating to the use of tools and equipment • work instructions, including job sheets, cutting lists, plans, drawings and designs • workplace procedures relating to reporting and communication • manufacturer specifications and operational procedures

Unit Mapping Information

Supersedes and is equivalent to LMFUP3001B Apply traditional foundations to upholstered furniture.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0601ab95-583a-4e93-b2d4-cfb27b03ed73

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Assessment Requirements for MSFUP3001 Apply traditional foundations to upholstered furniture

Modification History

Release 1 - New unit of competency

Performance Evidence

- Interpret work order and locate and apply relevant information
- Apply safe handling requirements for equipment, products and materials, including use of personal protective equipment
- Identify materials used in the work process
- Follow work instructions, operating procedures and inspection processes to:
  - minimise the risk of injury to self or others
  - prevent damage to goods, equipment and products
  - maintain required production output and product quality
- Interlace and turn back jute webbing, tie off and lace up coil springs, fit hessian bridles (loose and/or deep), coconut fibre, wadding and a stitched edge (one blind, one top) in a minimum of two (2) items of traditional upholstered furniture
- Use mathematical ideas and techniques to correctly complete measurements, calculate area and estimate material requirements
- Communicate ideas and information to enable confirmation of work requirements and specifications and the reporting of work outcomes and problems, interpret basic plans and follow safety procedures
- Avoid backtracking, work flow interruptions or wastage
- Work with others and in a team by recognising dependencies and using cooperative approaches to optimise work flow and productivity

Knowledge Evidence

- Work flow in relation to furniture production and refurbishment
- Features of range of traditional foundation types and fittings
- Materials and techniques used in the application of traditional foundations to upholstered furniture
- Materials used in the application of traditional foundations
- Identification of equipment, processes and procedures required for the application of traditional foundations to upholstered furniture

Assessment Conditions

- Assessors must:

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  - hold training and assessment competencies as determined by the National Skills Standards Council (NSSC) or its successors
  - have vocational competency in the furnishing industry at least to the level being assessed with broad industry knowledge and experience, usually combined with a relevant industry qualification
  - be familiar with the current skills and knowledge used and have relevant, current experience in the furnishing industry.
- Assessment methods must confirm consistency of performance over time rather than a single assessment event and in a range of workplace relevant contexts.
- Assessment must be by observation of relevant tasks with questioning on underpinning knowledge and, where applicable, multimedia evidence, supervisor's reports, projects and work samples.
- Assessment is to be conducted on single units of competency or in conjunction with other related units of competency. Foundation skills are integral to competent performance in the unit and should not be assessed separately.
- Assessment must occur on the job or in a workplace simulated facility with relevant process, equipment, materials, work instructions and deadlines.
- Access is required to furniture frames and traditional fittings, such as webbing stock, coil springs, padding materials, and a work order.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0601ab95-583a-4e93-b2d4-cfb27b03ed73

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MSMENV272 Participate in environmentally sustainable work practices

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAENV272B Participate in environmentally sustainable work practices.

Application

This unit describes the skills and knowledge required to comply with environmental regulations, identify environment issues and minimise the risks of negative impact on work and carry out improvements in own work area.

This unit applies to operators and team members who are required to follow procedures to work in an environmentally sustainable manner.

This unit applies to all sectors of the manufacturing industry and members of its value chain. It may also be applied to all sections of an organisation, including office and warehouse. This unit will need to be contextualised for the industry sector, organisation and section.

This unit applies to an individual working alone or as part of a team and working in liaison with other shift team members and the control room operator, as appropriate.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Unit Sector

HSE

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify current resource use and environmental issues	1.1 Identify workplace environmental and resource efficiency issues 1.2 Identify resources used in own work role 1.3 Confirm current usage of resources
2. Comply with environmental regulations	2.1 Read and follow environmental policies and procedures to ensure compliance with federal, state/territory and local government laws, by-laws, regulations and mandated codes of practice, and codes and standards that the organisation applies voluntarily 2.2 Ask questions and seek clarification relating to environmental work requirements 2.3 Identify incidents, including breaches or potential breaches of environmental regulations and occurrences outside of standard procedures and report to appropriate personnel 2.4 Report environmental incidents using workplace forms and procedures
3. Seek opportunities to improve environmental practices and resource efficiency	3.1 Follow workplace procedures to improve environmental practices and resource efficiency 3.2 Make suggestions for improvements to environmental workplace practices and work plans

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Release 2. Supersedes and is equivalent to MSAENV272B Participate in environmentally sustainable work practices.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMENV272 Participate in environmentally sustainable work practices

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed. Duplication between Performance Evidence and Performance Criteria removed. Assessment conditions updated.

Release 1. Supersedes and is equivalent to MSAENV272B Participate in environmentally sustainable work practices.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- followed environmental policies and identified potential breaches of environmental regulations and suggested improvements within the limit of own authority.
-

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- environmental sustainability issues relevant to organisation
- resource use and impact of inefficiencies associated with own work role
- environmental and resource efficiency policies and procedures for own work role
- environmental regulations and guidelines and their impact on own work role
- the environmental issues, hazards and risks associated with own work role
-

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
  - environmental regulations, guidelines and procedures
  - workplace incident reporting procedures and forms.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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MSMENV472 Implement and monitor environmentally sustainable work practices

Modification History

Release 1. Supersedes and is equivalent to MSAENV472B Implement and monitor environmentally sustainable work practices

Application

This unit of competency covers the skills and knowledge required to effectively analyse the workplace in relation to environmentally sustainable work practices, and to implement improvements and monitor their effectiveness.

This unit of competency applies to those who have responsibility for a specific area of work or who lead a work group or team. It addresses the knowledge, processes and techniques necessary to implement and monitor environmentally sustainable work practices, including the development of processes and tools.

It includes identifying areas for improvement, developing plans to make improvements, and implementing and monitoring improvements in environmental performance.

This unit of competency applies to all sectors of the manufacturing industry and members of its value chain. It may also be applied to all sections of an organisation, including office and warehouse. This unit will need to be appropriately contextualised as it is applied across an organisation and across different industry sectors.

This unit of competency applies to an individual working alone or as part of a team/work group and working in liaison with other shift team members and the control room operator, as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

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Competency Field

HSE

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	**Investigate current practices in relation to resource usage**	1.1	Identify environmental regulations applying to the enterprise
		1.2	Assess procedures for assessing compliance with environmental regulations
		1.3	Collect information on environmental and resource efficiency systems and procedures and provide to the work group, as required
		1.4	Measure and record current resource usage by members of the work group
		1.5	Analyse and record current purchasing strategies
		1.6	Analyse current work processes to access information and data, and assist in identifying areas for improvement
2	**Set targets for improvements**	2.1	Seek input from stakeholders, key personnel and specialists
		2.2	Access external sources of information and data as required
		2.3	Evaluate alternative solutions to workplace environmental issues
		2.4	Set efficiency targets
3	**Implement performance**	3.1	Source and use techniques/tools to assist in achieving targets

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	improvement strategies	3.2	Apply continuous improvement strategies to own work area of responsibility, and communicate ideas and possible solutions to the work group and management
		3.3	Integrate environmental and resource efficiency improvement plans for own work group with other operational activities and implement them
		3.4	Seek suggestions and ideas about environmental and resource efficiency management from stakeholders and act upon them where appropriate
		3.5	Implement costing strategies to fully value environmental assets
4	**Monitor performance**	4.1	Document outcomes and communicate reports on targets to key personnel and stakeholders
		4.2	Evaluate strategies and environmental performance, including breaches or potential breaches of regulations and occurrences outside of standard procedure which may lead to lower environmental performance
		4.3	Set new targets and investigate and apply new tools and strategies
		4.4	Promote successful strategies and reward participants where possible

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

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Regulatory framework

The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used, and include one or more of the following:

- legislative requirements, including work health and safety (WHS)
- industry codes of practice and guidelines
- environmental regulations and guidelines
- Australian and other standards
- licence and certification requirements
- *ISO 14001:2015 Environmental management systems*

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, and include one or more of the following:

- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMENV472 Implement and monitor environmentally sustainable work practices

Modification History

Release 1. Supersedes and is equivalent to MSAENV472B Implement and monitor environmentally sustainable work practices

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and must include the ability to:

- investigate/analyse resource usage
- evaluate improvement alternatives and set targets
- implement improvements within the limit of own authority
- monitor the performance of improvements.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- relevant environmental and resource efficiency issues, specific to industry practices, including:
  - contribution to climate change and other macro threats that can arise from materials and work processes used
  - regulated environmental issues
  - issues relevant to licencing conditions
- best practice environmental approaches relevant to own area of responsibility
- methods for measuring and calculating resource usage.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence:
  - should occur over a range of situations
  - will typically include a supervisor/third-party report focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - will typically include the use of appropriate tools, equipment and documents

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    - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should occur in operational workplace situations. Where this is not possible, or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment reflecting realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment in a simulated environment should use evidence collected from one or more of:
    - walk-throughs
    - pilot plant operation
    - demonstration of skills
    - industry based case studies/scenarios
    - ‘what ifs’.
- Knowledge evidence may be collected concurrently with performance evidence (provided a record is kept) or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept).
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- As a minimum, assessors must satisfy the Standards for Registered Training Organisations 2015 assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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MSMENV672 Develop workplace policy and procedures for environmental sustainability

Modification History

Release 1. Supersedes and is equivalent to MSAENV672B Develop workplace policy and procedures for environmental sustainability

Application

This unit of competency covers the skills and knowledge required to develop and implement a workplace sustainability policy, including the modification of the policy to suit changed circumstances.

This unit of competency applies to team leaders/supervisors/managers who are required to develop approaches to environmental sustainability within workplaces, including the development and implementation of policy.

It includes communicating with relevant stakeholders, developing and monitoring sustainability policies and reviewing and improving sustainability policies.

This unit of competency applies to all sectors of the manufacturing industry. It may also be applied to all sections of an organisation, including the office and warehouse. This unit will need to be appropriately contextualised as it is applied across an organisation and across different industry sectors.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of

Pre-requisite Unit

Nil

Competency Field

HSE

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Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Develop workplace sustainability policy	1.1	Define the scope of sustainability policy
		1.2	Identify and consult with stakeholders during the policy development process
		1.3	Review the environmental sustainability strategies relevant to all stages of work covered by the policy
		1.4	Make recommendations for policy options based on likely effectiveness, timeframes and cost
		1.5	Develop policy that reflects the organisation's commitment to sustainability as an integral part of the business planning, and as a business opportunity
		1.6	Agree upon appropriate methods of implementation
2	Communicate the policy	2.1	Promote the policy, including its expected outcome to key stakeholders
		2.2	Inform those involved in implementing the policy as to outcomes expected, activities to be undertaken and responsibilities assigned
3	Implement the policy	3.1	Develop and communicate procedures to help implement the policy
		3.2	Employ strategies for implementation of policy in resource efficiency
		3.3	Establish recording systems for tracking changes in sustainability approaches and assign responsibilities
4	Review policy	4.1	Record outcomes and provide feedback to key personnel

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implementation		and stakeholders
	4.2	Investigate success or otherwise of policy
	4.3	Monitor records to identify trends that may require remedial action to implemented policy and procedures
	4.4	Modify policy and or procedures as required to ensure improvements are made

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Regulatory framework

The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used, and include one or more of the following:

- legislative requirements, including work health and safety (WHS)
- industry codes of practice and guidelines
- environmental regulations and guidelines
- Australian and other standards
- licence and certification requirements
- *ISO 14001:2015 Environmental management systems*

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, and include one or more of the following:

- work instructions
- standard operating procedures (SOPs)

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- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSAENV672B Develop workplace policy and procedures for environmental sustainability

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMENV672 Develop workplace policy and procedures for environmental sustainability

Modification History

Release 1. Supersedes and is equivalent to MSAENV672B Develop workplace policy and procedures for environmental sustainability

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and must include the ability to:

- scope and develop an integrated sustainability policy and procedure within an enterprise
- raise awareness among stakeholders and those involved in implementing the policy of expected outcomes
- develop a workable implementation strategy
- ensure policy implementation is monitored, reviewed and modified where

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- relevant policy development and implementation processes and practices
- principles, practices and available tools and techniques of sustainability management relevant to the particular industry context.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
  - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
  - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should occur in operational workplace situations. Where this is not possible, or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment reflecting realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

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- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept).
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- As a minimum, assessors must satisfy the Standards for Registered Training Organisations 2015 assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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MSMSUP390 Use structured problem-solving tools

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed.

Release 1. Supersedes and is equivalent to MSAPMSUP390A Use structured problem-solving tools.

Application

This unit describes the skills and knowledge required to use structured process improvement tools to solve process and other problems. It describes the broad application of in-depth and rigorous structured problem-solving techniques to identify opportunities for improvement.

This unit applies to experienced operators, team leaders, supervisors or people in similar roles who are required to identify improvements and/or solve problems beyond those associated directly with the process unit and/or equipment.

This unit applies to an individual working alone or as part of a team or group and working in liaison with other shift team members and the control room operator, as appropriate.

This unit of competency applies to all work environments.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Support

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify the problem	1.1 Identify variances from desired operating and/or output parameters and quality 1.2 Define the extent, cause and nature of the problem by observation

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Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	and investigation 1.3 State and specify the problem clearly
2. Determine fundamental cause of problem	2.1 Select problem-solving tool appropriate to the problem and the context 2.2 Identify possible causes based on experience and the use of problem-solving tools and analytical techniques 2.3 Develop possible cause statements 2.4 Determine fundamental cause
3. Determine corrective action	3.1 Determine all possible options for resolution of the problem 3.2 Identify strengths and weaknesses of possible options 3.3 Determine corrective action to remove the problem and possible future causes 3.4 Develop implementation plans identifying measurable objectives, resource needs and timelines in accordance with safety and operating procedures 3.5 Develop recommendations for ongoing monitoring and testing
4. Communicate recommendations	4.1 Prepare report on recommendations 4.2 Present recommendations to appropriate personnel 4.3 Follow up recommendations

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Release 2. Supersedes and is equivalent to MSAPMSUP390A Use structured problem-solving tools

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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Assessment Requirements for MSMSUP390 Use structured problem-solving tools

Modification History

Release 2. Equivalent. Minor edits for improved clarity. Range of conditions removed.

Release 1. Supersedes and is equivalent to MSAPMSUP390A Use structured problem-solving tools.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- identified at least 1 problem
- analysed problem using at least 1 analysis tool drawn from each of 2 different groups of tools (basic, visual, process, business and organisation specific)
- selected the preferred solution
- developed and used an implementation plan, that includes:
  - specific, measurable, achievable, relevant, timed (SMART) objectives
  - resource requirements
  - methods for reaching objectives
  - timelines
  - methods of checking and adjusting adherence to plan
- communicated effectively with other personnel.
-

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- relevant organisation procedures
- risks, risk assessment and controls relevant to problem being analysed
- targets and measures for output and quality
- types and application of problem-solving tools and analytical techniques
- relevant equipment and operational processes.
-

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies, as well as, using suitable facilities, equipment and resources.

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Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027

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MSS403086 Improve cost factors in work practices

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Application

This unit describes the skills and knowledge required by an individual to evaluate the product or process outcomes of a team or work group in terms of their cost components and to be able to determine, in general terms, the cost impacts of alternative actions. This includes the efficient organisation of own work, and that of others in a work area or within a team, and the improvement of throughput and cycle times.

This applies to team members who will be required to problem solve, show initiative, plan, organise and manage own output and development. Decisions are made within the scope of the authority of the individual and other employees in the area or team and according to procedures.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil

Competency Field

Competitive systems and practices

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Analyse cost components of work area or**	1.1	Identify cost components in the product or process
		1.2	Identify costs factors under control of area or employees in the team

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
	team function	1.3 Identify causes of variability in costs
		1.4 Analyse impact of costs on production or process activities undertaken
2	**Improve cost-efficiency of processes and procedures**	2.1 Identify methods of improving productivity and reducing costs within area or team's responsibility
		2.2 Calculate cost benefit ratio of alternative methods of improving productivity and reducing costs
		2.3 Consult with all stakeholders regarding possible changes
		2.4 Recommend changes which will increase productivity and reduce cost and variability
		2.5 Implement recommended changes in consultation with stakeholders

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS403030 Improve cost factors in work practices.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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Assessment Requirements for MSS403086 Improve cost factors in work practices

Modification History

Release 1. Updated unit code. Changes to performance criteria. Range of conditions removed. Assessment requirements amended. Equivalent outcome.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- identified and analysed cost factors in work practices and made recommendations to improve costs on at least 1 occasion.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- cost components of products made
- costs concepts, including expense/capital, income and cost benefit ratios
- major cost contributors to product (including energy, materials and inputs, labour and distribution)
- difference between internally and externally controlled costs
- difference between overhead, capital, expense, labour and other consumables.
- causes of cost variances.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions, contingencies, facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

The MSS Sustainability Companion Volume implementation Guides are available from VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998

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MSTLG3001 Make a prototype

Modification History

Release 1. Supersedes and is equivalent to LMTLG3001A Make a prototype

Application

This unit of competency covers the skills and knowledge to design processes leading to the making of a prototype for marketing purposes and must reflect fashion trends and the enterprise focus of manufacture.

Work may be conducted in small to large scale enterprises and may involve individual and team activities. Work is performed within industry codes, standards and defined procedures.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Leather production

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Determine job requirements**	1.1 Follow standard operating procedures (SOPs)
		1.2 Comply with work health and safety (WHS) requirements at all times
		1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs

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		1.4	Identify job requirements from customer requirements, specifications, drawings, job sheets or work instructions
2	**Design or modify existing model**	2.1	Set up workstation in accordance with specifications and workplace procedures
		2.2	Design components to conform with model, using computer-aided design (CAD) or manual technique with reference to all relevant operations
		2.3	Select materials, trims and colours
		2.4	Produce models from appropriate materials to specifications
		2.5	Ensure ongoing liaison occurs with relevant departments in workplace to ensure workability and marketability of design and availability of materials and resources, including workforce skills
3	**Produce prototype**	3.1	Modify or design existing model to translate design concept into 3-D
		3.2	Coordinate making of prototype using sample patterns, relevant designed components and all relevant manufacturing processes
4	**Test prototype**	4.1	Liaise with other relevant departments in relation to practicality of design and cost of production, and predicted commercial success
		4.2	Review prototype with customer specifications and customer, as appropriate
		4.3	Make corrections, as necessary
		4.4	Make samples for marketing or testing
5	**Produce patterns**	5.1	Create standard or master pattern from the mean form
		5.2	Dissect standard to produce all working patterns, making adjustments for enterprise procedures and materials used

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to create patterns

5.3 Derive patterns from the master pattern allowing for adjustments, as required

5.4 Prepare and store documentation

Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Workplace procedures include one or more of the following:

- requirements prescribed by legislation, industry codes and standards, awards, agreements and conditions of employment
- SOPs
- work instructions
- oral, written and visual communication
- quality practices, including responsibility for maintenance of own work quality and contribution to quality improvement of team or section output
- housekeeping
- tasks related to environmental protection, waste disposal, pollution control and recycling
- WHS practices

Leather products include one or more of the following:

- clothing
- bags
- accessories
- saddles and saddlery components

Australian Standards

- the relevant industry or Australian Standards that are current at the time this unit is being undertaken

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include:

WHS practices

WHS practices must include hazard identification and control, risk assessment and implementation of risk reduction measures specific to the tasks described by this unit, and include one or more of the following:

- manual handling techniques
- PPE
- safe materials handling
- ergonomic arrangement of workplaces
- following marked walkways
- safe storage of equipment
- housekeeping
- reporting accidents and incidents
- other WHS practices relevant to the job and enterprise

Unit Mapping Information

Release 1. Supersedes and is equivalent to LMTLG3001A Make a prototype

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a203ec5c-de7d-406b-b3e1-8f1a9b76e92e

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Assessment Requirements for MSTLG3001 Make a prototype

Modification History

Release 1. Supersedes and is equivalent to LMTLG3001A Make a prototype

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria, and include:

- reading and following work instructions, standard operating procedures (SOPs), safe work practices, industry codes and standards
- planning and coordinating complicated designs, that consist of at least four (4) components, and prototype operations in line with specifications, customer requirements and work deadlines
- preparing equipment and work prior to commencing operations
- using computer-aided design (CAD) or manual techniques to design components to conform with model
- selecting appropriate materials
- liaising with other relevant departments to determine practicality of design, cost of production and predicted commercial success
- producing prototypes for at least two (2) different products, using appropriate manufacturing processes over the full range of operations
- reviewing prototype with customer specifications and customer
- making samples for marketing and testing and correcting, as necessary
- producing working patterns for at least two (2) different leather products.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- manufacturing focus of the enterprise
- manufacturing capacity, skill capacity, and tool or equipment base of workplace
- materials and properties and their reaction to manufacturing processes
- pattern design and prototype construction
- CAD and manual techniques used in the design phase
- quality standards and handling procedures
- work health and safety (WHS) and environmental aspects of relevant processes
- relevant federal and state or territory legislative or regulatory requirements
- recording and reporting procedures.

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Assessment Conditions

- Assessors must:
  - satisfy the assessor competency requirements that are in place at the time of the assessment, as set by the VET regulator
  - have vocational competency in making a prototype, at least to the level being assessed, with relevant industry knowledge and experience.
- Assessment should occur in operational workplace situations. Where this is not possible, or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment reflecting realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a203ec5c-de7d-406b-b3e1-8f1a9b76e92e

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MSTTF2002 Cut, bend and shape metal

Modification History

Release 1. Supersedes and is equivalent to LMTTF2017A Cut, bend and shape metal

Application

This unit of competency covers the skills and knowledge required to cut prescribed lengths of metal bar stock and to bend the lengths into various shapes by hand or with the aid of formers.

Work may involve interaction with other people in the workplace, including supervisors and production personnel. Work may be conducted in a variety of environments, such as operational indoor or outdoor workplaces and hazardous or exposed conditions

Work may be conducted in small to large scale enterprises and may involve individual and team activities. Work is performed within defined procedures under direct supervision.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Textile fabrication

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Determine job requirements**	1.1 Follow standard operating procedures (SOPs)
		1.2 Comply with work health and safety (WHS)

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			requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	**Prepare for cutting, bending and shaping metal**	2.1	Read and interpret workplace procedures and instructions
		2.2	Establish safe working environment
		2.3	Obtain specifications of material to be used and shape to be formed
		2.4	Plan sequence of task operations and calculate required length of material
		2.5	Select appropriate section material to meet specification, and choose suitable length of material stock for cutting to minimise waste
		2.6	Move material to be cut to work area
		2.7	Prepare appropriate hand and power tools
3	**Prepare for cutting process**	3.1	Mark out cutting points on material and select appropriate cutting equipment
		3.2	Check area to ensure equipment doesn’t become entangled or damaged during operation
		3.3	Secure material to prevent movement
4	**Cut material and informally check product**	4.1	Use safety equipment in accordance with WHS requirements when using cutting equipment
		4.2	Select and install appropriate consumables as to manufacturers requirements
		4.3	Set and operate equipment in accordance with accepted industry and WHS practices

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		4.4	Cut material to correct length and remove burrs or rough edges by brushing, grinding or filing
		4.5	Inspect cut sections to verify that their size and condition meets specifications and relevant workplace and industry quality standards
5	**Prepare for forming process**	5.1	Plan sequence of forming operations and select appropriate forming equipment
		5.2	Check forming equipment for damage or operating defects
		5.3	Select and set appropriate formers
6	**Form material and informally check product**	6.1	Place metal section in former and secure, as necessary
		6.2	Heat metal section to facilitate bending, as necessary
		6.3	Hot or cold bend the metal section around formers or hand form to required specification
		6.4	Descale or otherwise finish formed product after forming
		6.5	Inspect formed product to verify that it meets specifications and relevant workplace and industry quality standards
7	**Maintain work area and equipment**	7.1	Clean work area and stow tools and electrical equipment away safely
		7.2	Comply with environmental regulations to reuse, recycle or dispose of materials as required
		7.3	Clean and maintain cutting and forming equipment in accordance with workplace requirements and manufacturer specifications
		7.4	Perform programmed maintenance which is within the operator’s area of responsibility
		7.5	Inform supervisor of any abnormal conditions needing maintenance or repair

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Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Workplace procedures include one or more of the following:	• requirements prescribed by legislation, awards, agreements and conditions of employment • SOPs • work instructions • oral, written and visual communication • quality practices, including responsibility for maintenance of own work quality and contribution to quality improvement of team or section output • housekeeping • tasks related to environmental protection, waste disposal, pollution control and recycling • WHS practices
Australian Standards include:	• the relevant industry or Australian Standards that are current at the time this unit is being undertaken
Hand tools include one or more of the following:	• hammers • punches • vices • clamps • jigs • formers • hand drills • hacksaws • files • tongs

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- wire brushes plus gloves
- goggles and other safety equipment

Power tools include one or more of the following:

- power hacksaws
- portable electric drills
- portable sanders and wire brushes
- guillotine
- abrasive disk cutting equipment
- gas cutting equipment

WHS practices

WHS practices include hazard identification and control, risk assessment and implementation of risk reduction measures specific to the tasks described by this unit, and include one or more of the following:

- manual handling techniques
- SOPs
- PPE
- safe materials handling
- taking of rest breaks
- ergonomic arrangement of workplaces
- following marked walkways
- safe storage of equipment
- housekeeping
- reporting accidents and incidents
- environmental practices

Unit Mapping Information

Release 1. Supersedes and is equivalent to LMTTF2017A Cut, bend and shape metal

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a203ec5c-de7d-406b-b3e1-8f1a9b76e92e

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Assessment Requirements for MSTTF2002 Cut, bend and shape metal

Modification History

Release 1. Supersedes and is equivalent to LMTTF2017A Cut, bend and shape metal

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria, and include:

- reading and following work instructions, standard operating procedures (SOPs), safe work practices
- applying relevant standards
- complying with all relevant safety requirements applicable to the safe use of cutting and bending equipment
- interpreting work orders
- interpreting equipment and materials specifications and instructions needed for the cutting and forming processes
- setting up cutting and forming equipment
- performing cutting process using at least three (3) different tools or equipment according to workplace procedures, on at least three (3) different products
- performing forming processes according to workplace procedures on at least three (3) products
- inspecting completed work to assess quality
- performing normal operator maintenance of work area to enable work to be conducted safely and efficiently
- documenting and communicating work related information including reporting faults and other problems
- applying workplace procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- relevant Australian Standards
- specific work health and safety (WHS) requirements associated with cutting and heating equipment
- common metals and basic sections used in fabrication work
- metal cutting processes
- metal grinding and dressing processes
- metal forming processes

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- the range of cutting and forming equipment, hand tools and power tools used in cutting and forming processes and their appropriateness for particular applications
- power sources, such as single phase, three phase and weather-protected outlets
- operating principles of tools and equipment used in cutting, dressing and forming metals, including abrasive cutting wheels, gas equipment, grinding wheels, guillotines and power hacksaws
- hazards associated with powered machinery and gas equipment
- materials and equipment specifications
- environmental requirements of relevant industry and workplace procedures
- general housekeeping policies and procedures
- WHS practices, including hazard identification and control measures
- quality practices
- workplace procedures
- recording and reporting practices.

Assessment Conditions

- Assessors must:
  - satisfy the assessor competency requirements that are in place at the time of the assessment, as set by the VET regulator
  - have vocational competency in cutting, bending and shaping metal, at least to the level being assessed, with relevant industry knowledge and experience.
- Assessment should occur in operational workplace situations. Where this is not possible, or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment reflecting realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a203ec5c-de7d-406b-b3e1-8f1a9b76e92e

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MSTTF2012 Stitch by hand

Modification History

Release 1. Supersedes and is equivalent to LMTTF2012A Stitch by hand

Application

This unit of competency covers the skills and knowledge required to stitch canvas and sail products by hand.

The unit of competency applies to standard stitching of damaged seams, gussets, reinforcements, general repairs or modifications, and new work. Work may be conducted in a variety of environments, such as operational indoor or outdoor workplaces or on site.

Work may be conducted in small to large scale enterprises and may involve individual and team activities. Work is performed within defined procedures under direct supervision.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Textile fabrication

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine job requirements**	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS)

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			requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	**Prepare to stitch by hand**	2.1	Read and interpret workplace procedures and instructions and organise work to maximise safety and productivity
		2.2	Clear and clean work area and establish safe working environment
		2.3	Seek assistance to move and position work piece, if necessary
		2.4	Seek advice on appropriate thread to be used with regard to thread material, diameter of thread, tensile strength and colour
		2.5	Seek advice regarding appropriate needle to suit type of thread, type of stitch and material to be sewn
		2.6	Check condition of needle to ensure it is sharp, clean and free from rust and dirt
3	**Perform hand stitching**	3.1	Lay out material on working table or other suitable surface or support in situ in preparation for stitching process
		3.2	Choose appropriate type of stitch to suit the particular application
		3.3	Start stitching properly and perform hand stitching according to specifications
		3.4	Tie off last stitch, cut thread and inspect finished work to ensure it conforms to specification
4	**Check quality and finalise work**	4.1	Inspect completed work to verify that it meets job specifications and relevant workplace and industry quality standards

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4.2	Identify and mark any areas in need of re-work or rectification, perform re-work or arrange appropriate action
4.3	Label or tag completed product and complete any necessary documentation in accordance with workplace procedures
4.4	Store needles and threads in a dry and safe place and dispose of worn or damaged needles in accordance with manufacturer recommendations and workplace procedures
4.5	Clean work area and place tools back in storage

Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Workplace procedures include one or more of the following:

- requirements prescribed by legislation, awards, agreements and conditions of employment
- SOPs
- work instructions
- oral, written and visual communication
- quality practices, including responsibility for maintenance of own work quality and contribution to quality improvement of team or section output
- housekeeping
- tasks related to environmental protection, waste disposal, pollution control and recycling
- WHS practices

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Australian Standards include:	• the relevant industry or Australian Standards that are current at the time this unit is being undertaken
WHS practices	WHS practices include hazard identification and control, risk assessment and implementation of risk reduction measures specific to the tasks described by this unit, and include one or more of the following: • manual handling techniques • SOPs • PPE • safe materials handling • taking of rest breaks • ergonomic arrangement of workplaces • following marked walkways • safe storage of equipment • housekeeping • reporting accidents and incidents • environmental practices

Unit Mapping Information

Release 1. Supersedes and is equivalent to LMTTF2012A Stitch by hand

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a203ec5c-de7d-406b-b3e1-8f1a9b76e92e

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Assessment Requirements for MSTTF2012 Stitch by hand

Modification History

Release 1. Supersedes and is equivalent to LMTTF2012A Stitch by hand

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria, and include:

- reading and following work instructions, standard operating procedures (SOPs), safe work practices
- applying relevant standards
- complying with all relevant safety requirements, including safe use of needles and associated tools
- interpreting work orders
- interpreting standard specifications of needles, threads and materials used in the hand stitching process
- preparing and setting up material for hand stitching
- performing standard hand stitching processes on at least two (2) occasions
- inspecting completed work, checking quality and determining any rectification necessary
- performing normal operator maintenance of work area to enable work to be conducted safely and efficiently
- labelling or tagging work, and documenting and communicating work-related information, including reporting of faults and other problems, according to workplace procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- relevant Australian Standards
- hazards associated with hand stitching process
- standard hand stitching principles and techniques, including various types of stitches used
- the normal range of needles, threads and associated tools used in hand stitching and their appropriateness for particular applications
- materials specifications and material sewing characteristics
- quality standards applicable to hand stitching
- work health and safety (WHS) and environmental requirements of relevant industry and workplace procedures
- general housekeeping policies and procedures
- quality practices
- workplace procedures

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- recording and reporting practices.

Assessment Conditions

- Assessors must:
  - satisfy the assessor competency requirements that are in place at the time of the assessment, as set by the VET regulator
  - have vocational competency in stitching by hand, at least to the level being assessed, with relevant industry knowledge and experience.
- Assessment should occur in operational workplace situations. Where this is not possible, or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment reflecting realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a203ec5c-de7d-406b-b3e1-8f1a9b76e92e

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MSTTF2015 Install products on and off site

Modification History

Release 1. Supersedes and is equivalent to LMTTF2016A Install products on and off site

Application

This unit of competency covers the skills and knowledge required to install canvas and sail products both on site and off site.

The unit of competency applies to the installation, operation and maintenance of canvas and sail products and equipment both on and off site. Work may be conducted in a variety of environments, such as operational indoor, outdoor workplaces or on site

Work may require independence, discretion, judgement and acceptance of responsibility for overall work outcomes. Work may involve planning and coordination of tasks and processes, interaction with other enterprise personnel, enterprise clients, manufacturer representatives and other external personnel.

Work may be conducted in small to large scale enterprises and may involve individual and team activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Textile fabrication

Unit Sector

Not applicable

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Determine job requirements**	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	**Prepare for installation**	2.1	Read and interpret workplace procedures and instructions, including interpreting drawings and technical information to guide installation
		2.2	Plan task operation sequence, identify suitable electrical power outlets and equipment to work above ground, as required
		2.3	Arrange additional assistance, if required
		2.4	Select and prepare appropriate tools and prepare site
3	**Prepare to work above ground**	3.1	Select, secure and adequately support ladders or other devices, such as steps or bosun's chair, as required for the tasks
		3.2	Erect appropriate barriers and signs when working overhead
		3.3	Obtain assistance, as necessary, when working above the ground or deck
4	**Fit products**	4.1	Use appropriate marking tools and measuring equipment to mark out fitting positions
		4.2	Check products to be installed to ensure they meet specifications and are fit for their intended purpose

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		4.3	Use appropriate ladders or other devices to gain height advantage
		4.4	Sequence all operations according to specifications and workplace procedures ,as required, to complete a normal installation
		4.5	Apply appropriate WHS precautions and environmental practices during all phases of the installation
		4.6	Work in cooperation with other team members, as required, to fit products
5	**Inspect and check quality**	5.1	Inspect completed work to verify that the products and installation work meet job specifications and relevant workplace and industry quality standards
		5.2	Check that installation is correct, and that products fit and operate correctly
		5.3	Determine if any re-work or rectification is required, undertake re-work or take other appropriate action
6	**Provide customer information and finalise work**	6.1	Supply customer with information on how to use product, as required
		6.2	Demonstrate product to customer and answer questions within scope of own responsibility
		6.3	Clean work area, clean and return tools to safe storage, and perform normal basic maintenance, in accordance with workplace procedures
		6.4	Clean and stow away ladders, bosun's chair or other equipment
		6.5	Complete project documentation and obtain customer signature, if required

Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

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Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Workplace procedures include one or more of the following:

- requirements prescribed by legislation, awards, agreements and conditions of employment
- SOPs
- work instructions
- oral, written and visual communication
- quality practices, including responsibility for maintenance of own work quality and contribution to quality improvement of team or section output
- housekeeping
- tasks related to environmental protection, waste disposal, pollution control and recycling
- WHS practices

Australian Standards include:

- the relevant industry or Australian Standards that are current at the time this unit is being undertaken

Products include one or more of the following:

- blinds
- awnings
- annexes
- sails

Tools include one or more of the following:

- hand tools:
  - hammers
  - punches
  - hand drills
  - saws
  - hacksaws
  - rasps
  - wire brushes
  - pop-rivets
  - expanding bolts

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- power tools:
- portable electric drills
- routers
- portable sanders
- abrasive disk cutting equipment
- electric punches

Normal installation includes one or more of the following

- using appropriate tools to drill and prepare locating holes
- safely lifting or lowering products into position
- using appropriate fastenings to attach or anchor product
- fitting pulleys or sheave blocks
- threading or attaching ropes or cables, as necessary
- fitting stays or other fastenings
- cleaning up work area after fitting

WHS practices

WHS practices include hazard identification and control, risk assessment and implementation of risk reduction measures specific to the tasks described by this unit, and include one or more of the following:

- manual handling techniques
- SOPs
- PPE
- safe materials handling
- taking of rest breaks
- ergonomic arrangement of workplaces
- following marked walkways
- safe storage of equipment
- housekeeping
- reporting accidents and incidents
- environmental practices

Unit Mapping Information

Release 1. Supersedes and is equivalent to LMTTF2016A Install products on and off site

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a203ec5c-de7d-406b-b3e1-8f1a9b76e92e

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Assessment Requirements for MSTTF2015 Install products on and off site

Modification History

Release 1. Supersedes and is equivalent to LMTTF2016A Install products on and off site

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria, and include:

- reading and following work instructions, standard operating procedures (SOPs), safe work practices
- applying relevant standards
- complying with all relevant safety requirements, including safe use of ladders, bosun's chair, load hoisting equipment and electrical equipment
- interpreting work orders, drawings and installation instructions
- complying with product and equipment specifications during installation
- performing normal installation and setting of products and equipment on at least two (2) occasions
- using relevant hand and power tools safely
- inspecting and testing operation of installed products and equipment
- specifying any rectification necessary
- performing normal operator maintenance of work area to enable work to be conducted safely and efficiently
- communicating effectively with client on installation process and product operation
- demonstrating products to customer, answering questions, completing project documentation and obtaining customer signature, if required, according to workplace procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- relevant Australian Standards
- electrical and general workplace hazards and means of identifying them
- operating principles of products and associated equipment to be installed
- the range of hand tools, power tools, measuring devices and other equipment used in the installation process, and their operating principles and appropriateness for particular applications
- power sources, such as single phase, three phase and weather-protected outlets
- format of product and equipment specifications

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- setting and adjustment principles and processes for products and equipment being installed
- typical problems of products and associated equipment and their rectification procedures
- relevant product quality standards for products and equipment installed
- work health and safety (WHS) and environmental requirements of relevant industry and workplace procedures, including use of equipment for working aloft
- general housekeeping policies and procedures
- mathematical processes used in the installation and checking processes
- WHS practices, including hazard identification and control measures
- quality practices
- workplace procedures
- recording and reporting practices.

Assessment Conditions

- Assessors must:
  - satisfy the assessor competency requirements that are in place at the time of the assessment, as set by the VET regulator
  - have vocational competency in installing products on and off site, at least to the level being assessed, with relevant industry knowledge and experience.
- Assessment should occur in operational workplace situations. Where this is not possible, or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment reflecting realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a203ec5c-de7d-406b-b3e1-8f1a9b76e92e

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MSTTF3002 Gain customer acceptance of service proposal

Modification History

Release 1. Supersedes and is equivalent to LMTTF3002A Gain customer acceptance of service proposal

Application

This unit of competency covers the skills and knowledge required to gain customer acceptance of a proposal to provide a product and service.

The unit of competency applies to establishing and documenting a proposal to meet customer requirements and obtaining agreement for work to proceed. Interaction with the customer is usually performed individually but may involve collaborative approach with other personnel from the operator's workplace.

Work may be conducted in a variety of environments, such as operational indoor, outdoor workplaces or on site.

Work may be conducted in small to large scale enterprises and may involve individual and team activities. Work is performed within defined procedures under direct supervision.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Textile fabrication

Unit Sector

Not applicable

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Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	**Develop customer proposal**	1.1	Review documentation to confirm all required information is available
		1.2	Establish customer requirements and determine products, processes and service for customer
		1.3	Identify alternatives and determine material and production costs
		1.4	Calculate costs for proposed service
		1.5	Assess timing, costs and service against customer requirements
		1.6	Develop proposal and document for customer
2	**Present proposal to customer**	2.1	Contact customer and present proposal in person, or by using digital technology or by other arranged means
		2.2	Provide customer with detailed information regarding products, processes and alternative solutions, which could satisfy customer requirements
		2.3	Discuss features and benefits of proposal with the customer
3	**Seek customer acceptance**	3.1	Respond to any customer concerns, seek customer approval and acceptance, and confirm agreement
		3.2	Identify any required changes to the proposal and modify proposal accordingly
		3.3	Obtain customer acceptance
4	**Confirm service to be provided**	4.1	Confirm customer address and contact details
		4.2	Establish agreement with the customer and obtain signature

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4.3 Confirm time, product and service to be provided and arrange delivery

4.4 Provide duplicate of proposal and agreement to customer for future reference

4.5 Obtain deposit, where applicable, or arrange other payment from customer

4.6 Provide customer receipt and record form of payment

Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Workplace procedures include one or more of the following:

- requirements prescribed by legislation, awards, agreements and conditions of employment
- standard operating procedures (SOPs)
- work instructions
- oral, written and visual communication
- quality practices, including responsibility for maintenance of own work quality and contribution to quality improvement of team or section output
- housekeeping
- tasks related to environmental protection, waste disposal, pollution control and recycling
- work health and safety (WHS) practices

Australian Standards include:

- the relevant industry or Australian Standards that are current at the time this unit is being undertaken

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Documentation includes one or more of the following:	• sketches, diagrams and maps • dimensions and measurements • documentation on customer requirements
Customer requirements include one or more of the following:	• types of materials • types of products and equipment • operating principles and mechanisms • costs • timelines • colours • size, dimensions and shape • delivery and installation dates • installation procedure to be followed
WHS practices	WHS practices include hazard identification and control, risk assessment and implementation of risk reduction measures specific to the tasks described by this unit, and include one or more of the following: • manual handling techniques • SOPs • personal protective equipment (PPE) • safe materials handling • taking of rest breaks • ergonomic arrangement of workplaces • following marked walkways • safe storage of equipment • housekeeping • reporting accidents and incidents • environmental practices

Unit Mapping Information

Release 1. Supersedes and is equivalent to LMTTF3002A Gain customer acceptance of service proposal

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a203ec5c-de7d-406b-b3e1-8f1a9b76e92e

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Assessment Requirements for MSTTF3002 Gain customer acceptance of service proposal

Modification History

Release 1. Supersedes and is equivalent to LMTTF3002A Gain customer acceptance of service proposal

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least three occasions and include:

- reading and following work instructions, standard operating procedures (SOPs), safe work practices
- applying relevant standards
- establishing customer requirements and determining products, processes and services for customer, on at least three (3) occasions
- calculating costs and identifying details of proposed products and services
- providing customer with detailed proposal in person, or electronically or other appropriate method
- answering customer queries to clarify or amend proposal if required
- developing written proposal for customer approval, incorporating all required details, including costs, products and services and timeframe
- establishing agreement with the customer and obtaining signature and deposit or arranging other payment
- completing required documentation for customer and own workplace according workplace procedures.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- relevant Australian Standards
- workplace documentation and procedures for establishing agreements to provide services
- hazards associated with working at heights
- range of products and services offered by the enterprise
- principles of operating products and equipment
- types of materials and their applications
- limitations of canvas and other materials used
- types of strengthening and fastenings
- service life of different materials
- instruments and techniques for measuring

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- mathematical processes
- mathematical formulas for area and volume
- labour rates and approximate costs of products and materials
- power sources such as single phase, three phase, and weather protected outlets
- work health and safety (WHS) and environmental requirements of relevant industry and workplace procedures
- general industry housekeeping policies and procedures
- WHS practices, including hazard identification and control measures
- quality practices
- workplace procedures
- practices for documenting agreements and recording and reporting provision of products and services.

Assessment Conditions

- Assessors must:
  - satisfy the assessor competency requirements that are in place at the time of the assessment, as set by the VET regulator
  - have vocational competency in gaining customer acceptance of service proposal, at least to the level being assessed, with relevant industry knowledge and experience.
- Assessment should occur in operational workplace situations. Where this is not possible, or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment reflecting realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a203ec5c-de7d-406b-b3e1-8f1a9b76e92e

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PMBPROD336 Inspect heavy off-the-road tyres

Modification History

Release 1. Supersedes and is equivalent to PMBPROD336A Inspect heavy off-the-road tyres

Application

This unit of competency covers the skills and knowledge required to inspect heavy off-the-road tyres. It applies to tyres defined by AS 4457.2-2008 Earth-moving machinery - Off-the-road wheels, rims and tyres - Maintenance and repair - Tyres (or its replacement) or similar tyres.

This unit of competency applies to operators who are required to plan the work, complete paperwork, determine reparability of the tyre, communicate with customers and solve problems within area of responsibility.

This unit of competency applies to an operator demonstrating theoretical and technical knowledge and well developed skills in situations that require some discretion and judgement. The operator may work alone or as a member of a team or group and will work in liaison with other shift team members, team leader and supervisor, as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Production

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

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1	**Prepare for inspection**	1.1	Complete initial documentation for tyre
		1.2	Raise all relevant paperwork as required
		1.3	Clean tyre ready for inspection
		1.4	Position tyre securely for inspection
2	**Inspect tyre**	2.1	Identify injuries to tyre both internally and externally
		2.2	Investigate injuries for extent and nature
		2.3	Identify injuries/tyres which are irreparable
		2.4	Determine injuries which should be repaired
		2.5	Mark areas requiring repair
		2.6	Categorise injuries to standard
		2.7	Determine overall reparability of the tyre
3	**Finalise inspection**	3.1	Complete any required internal paperwork
		3.2	Prepare customer quotation as required
		3.3	Communicate with customer in accordance with procedures
		3.4	Make arrangements for tyre to be repaired, scrapped or returned as required
4	**Anticipate and solve problems**	4.1	Recognise a problem or a potential problem
		4.2	Determine problems needing priority action
		4.3	Refer problems outside area of responsibility to appropriate person, with possible causes
		4.4	Seek information and assistance as required to solve problems
		4.5	Solve problems within area of responsibility

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4.6 Follow through items initiated until final resolution has occurred

Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Regulatory framework

The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used.

Applicable legislation, regulations, standards and codes of practice include:

- health, safety and environmental (HSE) legislation, regulations and codes of practice relevant to the workplace, manual handling and hazardous materials
- AS 4457.2-2008 Earth-moving machinery - Off-the-road wheels, rims and tyres - Maintenance and repair – Tyres, or its replacement
- other Australian/international standards relevant to the materials being used and products being made
- any relevant licence and certification requirements.

All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state/territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and such requirements the legislative requirements take precedence.

Procedures

All operations must be performed in accordance with relevant procedures.

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Procedures are written, verbal, visual, computer-based or in some other form, and include one or any combination of:

- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Tools and equipment

Tools and equipment include:

- inspection equipment, including one or more of:
  - NDI scanning equipment
  - nail hole detector
  - high pressure tester
  - x-ray
  - ultrasound
- ancillary equipment that is integral to the process.

Additional tools and equipment will be selected as required from:

- hand tools used in this process
- power tools used in this process
- hoists/lifting equipment not requiring any special permits or licences
- manual handling aids, such as hand carts and trolleys
- relevant personal protective equipment (PPE).

Problems

Routine and non-routine problems must be resolved.

Non-routine problems must be resolved by applying operational knowledge to develop new solutions, either individually or in collaboration with relevant experts, to:

- determine problems needing action
- determine possible fault causes
- develop solutions to problems which do not have a known solution
- follow through items initiated until final resolution has occurred
- report problems outside area of responsibility to designated person.

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Non-routine problems are unexpected problems or variations of previous problems and include one or more of:

- variations in quality
- emergency situations
- intermittent faults.

Operational knowledge includes one or more of:

- procedures
- training
- technical information, such as journals and engineering specifications
- remembered experience
- relevant knowledge obtained from appropriate people.

Routine problems are predictable and have known solutions and include one or more of:

- equipment malfunctions
- hidden damage
- broken chords
- cord body fabric damage
- variations in materials.

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMBPROD336A Inspect heavy off-the-road tyres

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=932aacef-7947-4c80-acc6-593719fe4090

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Assessment Requirements for PMBPROD336 Inspect heavy off-the-road tyres

Modification History

Release 1. Supersedes and is equivalent to PMBPROD336A Inspect heavy off-the-road tyres

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and demonstrate the ability to:

- read and interpret procedures, job specifications, material labels and safety data sheets (SDS)
- distinguish between:
  - injuries which do not need repair and should be returned to the customer to be used as is
  - injuries which should be repaired
  - injuries which are beyond repair and require tyre to be scrapped
- determine injuries to tyres, including:
  - cuts, abrasion, splits, cracks and crazing
  - separations within the structure
  - deformities both surface and internal
  - penetrations into and through the casing/carcass
  - hidden injuries
- plan the inspection process and sequence tasks
- select and set up inspection equipment and materials to meet specifications
- start up and operate the equipment
- maintain output and product quality using appropriate instruments, controls, test information and readings
- safely shut down equipment in normal and abnormal circumstances
- identify hazards and apply relevant hazard controls
- apply safety procedures
- apply housekeeping procedures
- apply waste management procedures
- recognise early warning signs of equipment/processes needing attention or with potential problems
- distinguish between causes of problems, including:
  - operational problems
  - instrument failure/malfunction
  - electrical failure/malfunction
  - mechanical failure/malfunction

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  - wrong readings
  - equipment design deficiencies
  - materials properties
  - process variables
  - raw material variations/contamination
  - process abnormalities
  - procedural errors
- recognise and prioritise problems requiring action
- resolve routine and non-routine problems
- communicate effectively with team/work group and supervisors
- complete workplace records
- do basic arithmetical manipulations, including additions, subtractions, divisions, fractions and percentages.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job sufficient to operate independently and to solve routine and non-routine problems, including knowledge of:

- function and operating principles of inspection equipment, machine components and ancillary equipment
- types and application of inspection methods/processes
- heavy off-the-road tyre construction
- radial and bias ply construction
- common injuries to heavy off-the-road tyres and their indicators
- common hidden injuries and their indicators, including
  - cuts
  - oxidation
  - separations
- types of injuries which do not need repairing, injuries which are reparable and injuries which either individually or in the sum should not be repaired
- methods of identifying lug/position identification
- impact of significantly faulty tyres falsely passing inspection
- factors which may affect inspection output or product quality and appropriate remedies
- routine and non-routine problems that may arise, the range of possible causes and appropriate actions
- organisation procedures relevant to the work environment/job role
- hierarchy of control
- hazards that may arise in the job/work environment and:
  - their possible causes
  - potential consequences
  - appropriate risk controls.

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Assessment Conditions

- The unit should be assessed holistically and the judgement of competence shall be based on a holistic assessment of the evidence.
- In all plants it may be appropriate to assess this unit concurrently with units such as:
  - teamwork
  - communication.
- The collection of performance evidence:
  - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
  - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
  - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start and stop procedures and responding to problems
  - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.
- Assessment should occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment in a simulated environment should use evidence collected from demonstration of skills and one or more of:
  - walk-throughs
  - pilot plant operation
  - industry-based case studies/scenarios
  - ‘what ifs’.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.

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- In addition the assessor or anyone acting in subject matter expert role in assessment shall demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they shall assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
  - relevant VET or other qualification/Statement of Attainment
  - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
  - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions
- Currency can be demonstrated through one or more of:
  - being currently employed undertaking the type of work being assessed
  - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
  - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
  - conducting on the job training/assessments of the type of work being assessed
  - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=932aacef-7947-4c80-acc6-593719fe4090

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RIICOM201D Communicate in the workplace

Modification History

Release	Comment
1	This unit replaces RIICOM201A Communicate in the workplace
2	Editorial corrections.
3	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to communicate in the workplace within the Resources and Infrastructure Industries. This unit is appropriate for those working in operational roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Elements and Performance Criteria

1 Plan and prepare for workplace communication using equipment and systems	1.1 Access, interpret and apply communication site documentation and ensure the work activity is compliant 1.2 Identify and access communication equipment and system components 1.3 Establish and maintain communication with others 1.4 Access and apply communication equipment and systems safety procedures
2 Communicate using communication equipment and systems	2.1 Identify and select the most appropriate method of communication 2.2 Use communication equipment and systems 2.3 Acknowledge and respond to communication 2.4 Take, confirm and pass messages on promptly to the others 2.5 Pass communications in a clear and concise manner

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	2.6 Follow safety procedures, including the passing of reports and observance of local communications and emergency procedures 2.7 Identify and report faults in communication equipment
3 Carry out face-to-face routine communication	3.1 Speak clearly and listen carefully to promote understanding 3.2 Ask questions of the audience and confirm meaning of information 3.3 Maintain communication processes with others to assist flow of work activities 3.4 Use site approved signalling methods to convey information 3.5 Participate in discussion to obtain information and clarify meaning 3.6 Communicate cooperatively and effectively with others
4 Complete written documentation	4.1 Complete written documentation clearly, concisely and on time 4.2 Use approved documents 4.3 Pass on written information to others

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIICOM201A Communicate in the workplace

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIICOM201D Communicate in the workplace

Modification History

Release	Comment
1	This unit replaces RIICOM201A Communicate in the workplace
2	Editorial corrections.
3	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- demonstrates completion of communicating in the work place that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - identifying communication strategies and systems
  - operating communications systems and equipment to convey meaning to others
  - communicating clearly and promptly to others to convey information and make meaning
  - listening carefully to instructions and information
  - participating in group discussions and engage with group members respectfully
  - asking questions to clarify meaning
  - communicating concisely both written and verbally
  - interpreting other communications such as flags, lights, signs, bells and whistles
  - identifying and reporting communication faults and deficiencies
  - using approved and preparing written documentation that communicates meaning to others

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Knowledge Evidence

The candidate must demonstrate knowledge of communicating in the workplace through:

- relevant standards and site procedures
- worksite communication system components, applications and limitations
- procedures and safety requirements of communication equipment and systems
- common faults in communication equipment/systems
- emergency communication procedures
- record maintenance

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment; and,
- simulation may be used for assessment of this Unit of Competency where it does not compromise the quality of assessment outcomes and provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills;
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal	1	1 Year

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Mining, Extractive (Quarrying) and Civil Construction	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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RIIHAN301E Operate elevating work platform

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.

Application

This unit describes the skills and knowledge required to operate an elevating work platform at any height.

This unit applies to those working in operational roles.

The work required in this unit relates to the National Standard for High Risk Work but this unit does not provide the licence. Licensing, legislative, regulatory or certification requirements that may apply to this unit can vary between states, territories and industry sectors, and must be sourced prior to applying this unit.

This unit alone does not provide sufficient skill to independently load and unload equipment. To perform this activity safely, personnel must either complete or be assisted by someone who has completed RIIHAN308F Load and Unload Plant or equivalent.

Unit Sector

Coal mining

Metalliferous mining

Drilling

Extractive

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and prepare for operating an elevating work platform	1.1 Access, interpret and apply elevating work platforms documentation for allocated job and ensure work activity is compliant with site policies and procedures to perform the work as planned

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	1.2 Obtain, interpret, clarify and confirm work requirements 1.3 Confirm hazards, environmental issues, and risks, and implement required control measures according to site risk management plans and processes 1.4 Select and wear personal protective equipment required for work activities 1.5 Obtain and interpret emergency procedures for elevating work platform in preparation for emergencies and incidents 1.6 Coordinate and communicate planned activities with others at the site prior to commencing work activity
2. Operate elevating work platform in line with established requirements to complete work activity	2.1 Carry out pre-start and post-start inspections and checks in line with Australian Standards and workplace procedures 2.2 Identify faults or defects and report within scope of own responsibility and according to workplace procedures 2.3 Apply site specific requirements for relocating the elevating work platform to work site 2.4 Stabilise or position elevating work platform according to work site conditions and requirements 2.5 Ensure work site is clear of personnel and other potential hazards 2.6 Place any tools and equipment required to perform work activity into bucket or platform according to workplace procedures 2.7 Operate elevating work platform within performance capabilities of brand and model of elevating work platform 2.8 Use manufacturer approved safety devices fitted to the machine in line with workplace procedures where applicable 2.9 Respond accordingly to monitoring systems and alarms according to workplace procedures 2.10 Monitor hazards and risks and ensure safety of self, other personnel, plant and equipment 2.11 Complete work activity and shut-down equipment in line with work requirements and workplace procedures
3. Conduct housekeeping activities	3.1 Clear work area and dispose, reuse or recycle materials 3.2 Move the elevating work platform to a safe space, applying site specific workplace procedures and requirements 3.3 Check, clean, maintain and store elevating work platform, tools and equipment according to workplace procedures 3.4 Complete and file documentation, and distribute according to workplace requirements

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skill	Description
Reading	• Identifies and interprets relevant information and ideas from workplace procedures, documentation, safety alerts, legislation and regulations
Numeracy	• Identifies and comprehends relevant mathematical information in required to determine equipment operating capacities

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
RIIHAN301E Operate elevating work platform (Release 1)	RIIHAN301D Operate elevating work platform (Release 3)	Minor updates to all sections to reflect operator's role.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIIHAN301E Operate elevating work platform

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit.

The candidate must demonstrate completion of operating an elevating work platform that safely, effectively and efficiently follows legislative requirements and workplace procedures to carry out work activity on at least two occasions. This includes:

- planning and preparing for operating elevating work platforms
- selecting and using the required plant, tools and equipment to perform work activity
- identifying site requirements for emergencies at heights
- stabilising or positioning elevating work platform
- using manufacturer approved safety devices fitted to the machine
- moving the elevating work platform to and from work site
- inspecting work platform and identifying faults
- reviewing machine maintenance logbook records
- checking, cleaning, maintaining and storing elevating work platform, tools and equipment

In the course of the above work, the candidate must also:

- locate and apply required documentation, policies and procedures
- select and wear personal protective equipment required for work activities
- monitor and manage equipment performance using indicators and alarms
- use a range of communication techniques and equipment essential to the safe completion of work instructions
- meet written and verbal reporting requirements and procedures associated with operating an elevating work platform

Knowledge Evidence

The candidate must demonstrate the following knowledge to effectively complete the tasks outlined in the elements and performance criteria of this unit.

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Key policies, procedures and relevant standards for operating an elevating work platform as described in the performance evidence above, including those relating to:

- National Standard for high risk work
- safe work practices
- operating manuals for elevating work platform
- site personnel and operational safety requirements
- elevating work platform operational procedures
- hazard, incident and emergency identification and implementation of control measures, including the risk of overhead crushes, and distance from power lines
- disposal of hazardous materials

Key site information, including:

- suitability of ground conditions, terrain and structure surfaces
- environmental requirements and constraints related to elevating work platforms

Key features associated with performance of an elevating work platform, including:

- types of elevating work platforms, their characteristics, technical capabilities and limitations

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below.

The assessment must:

- include access to:
  - elevating work platform
  - personal protective equipment required for the activities described in the performance evidence
- be conducted in a safe environment
- be assessed in the context of this sector's work environment
- be assessed in compliance with relevant legislation and regulations and using policies, procedures, and processes directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances.

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

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Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory regulatory standards as set out in the Standards for Registered Training Organisations (RTOs) 2015/AQTF mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements. This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided
- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing a high level of RII training product knowledge
- having an understanding and knowledge of legislation and regulations relevant to the industry and to employment and workplaces
- demonstrating the performance evidence and knowledge evidence outlined in this unit of competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must hold the relevant vocational competencies and have current industry skills directly relevant to the training and assessment being provided, and must work alongside a trainer and/or assessor to conduct the assessment. This means the industry subject matter expert should hold the unit being assessed (or an equivalent unit) and must also demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed.

Industry sector	**AQF indicator level*** **	**Required assessor or industry subject matter expert experience**
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 Year
	2	2 Years
Drilling, Coal Mining, Extractive (Quarrying),	3-6	3 Years

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Industry sector	**AQF indicator level*** **	**Required assessor or industry subject matter expert experience**
Metalliferous Mining and Civil Infrastructure		
Other sectors	Where this unit is being assessed outside of the resources and infrastructure sectors, assessor and/or industry subject matter expert experience should be in line with industry standards for the sector in which it is being assessed and, where no industry standard is specified, should comply with any relevant regulation.	

*Guidance on simulated environments has been stipulated in the RII implementation guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

***While a Unit of Competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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RIIQUA201D Maintain and monitor site quality standards

Modification History

Release	Comment
1	This unit replaces RIIQUA201A Maintain and monitor site quality standards
2	Editorial corrections
3	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to maintain and monitor site quality standards in the Resources and Infrastructure Industries.

This unit is appropriate for those working in operational roles.

No licensing or certification requirements apply to this unit at the time of publication.

Elements and Performance Criteria

1 Plan, prepare for quality work outcomes	1.1 Access, interpret and apply quality standards and ensure the work activity is compliant 1.2 Identify and agree on performance indicators for own work 1.3 Plan and prepare for work to achieve quality standards 1.4 Complete work within time, quality, cost and productivity parameters
2 Apply quality systems to own work	2.1 Carry out work to meet quality standards 2.2 Adjust performance indicators to meet changing circumstances that affect quality standard requirements 2.3 Suggest procedure improvements to others for continuous improvement quality standards 2.4 Take corrective actions to improve work outcomes 2.5 Complete quality documentation

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3 Monitor and report quality standards	3.1 Monitor quality of outputs and identify non-compliance 3.2 Prepare written records of quality outputs and report non-compliance 3.3 Monitor work processes, report incidents apply local risk control processes to minimise quality non-compliance 3.4 Communicate variation to quality outputs and standards to others

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIIQUA201A Maintain and monitor site quality standards

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIIQUA201D Maintain and monitor site quality standards

Modification History

Release	Comment
1	This unit replaces RIIQUA201A Maintain and monitor site quality standards
2	Editorial corrections
3	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant legislation, documentation, policies and procedures
- demonstrates completion of the monitoring and maintenance of site quality standards that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - organising work activities to comply with site quality standards
  - identifies and agrees on performance indicators
  - completes work within set parameters
  - recommends and communicates continuous improvements to quality standards
  - processes quality written documentation
  - monitors work processes, reports incidents and applies local risk processes

Knowledge Evidence

The candidate must demonstrate knowledge of maintaining and monitoring site quality standards through:

- accessing, interpreting and applying the organisation and site requirements and procedures
- work healthy and safety
- maintaining the standards for site/enterprise quality systems and processes

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- performing work planning processes
- technical and operational capability and limitations of resources and workplace equipment being used
- applying reporting procedures

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert	

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	experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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RIIRIS201D Conduct local risk control

Modification History

Release	Comment
1	This unit replaces RIIRIS201B Conduct local risk control
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to conduct local risk control in the Resources and Infrastructure Industries.

This unit is appropriate for those working in operational roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Elements and Performance Criteria

1 Plan and prepare for risk control	1.1 Access, interpret and apply risk management documentation and ensure the work activity is compliant 1.2 Inspect work area conditions to identify potential hazards 1.3 Apply risk management procedures to deal with recognised hazards 1.4 Recognise the type and scope of unresolved hazards and their likely impact
2 Assess and identify unacceptable risk	2.1 Assess and determine consequence of an event 2.2 Consider and determine likelihood of the event 2.3 Identify criteria for the acceptability/unacceptability of the risk 2.4 Assess risk against criteria to identify if it warrants 'unacceptable risk' status and action 2.5 Effectively communicate and clarify the decision to others
3 Identify, assess and	3.1 Identify and consider all possible risk treatment options

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implement risk treatments	3.2 Identify options by preliminary analysis and consideration of options 3.3 Analyse options, including resource requirements 3.4 Select most appropriate and effective course of action 3.5 Plan and prepare the course of action in detail and acquire/obtain required resources and approval 3.6 Implement the approved risk treatment 3.7 Review risk management processes
4 Complete records and reports	4.1 Effectively communicate accurate information to others on the course of action and implementation 4.2 Complete written records and reports for hazards and actions from personal risk assessment

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIIRIS201B Conduct local risk control

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIIRIS201D Conduct local risk control

Modification History

Release	Comment
1	This unit replaces RIIRIS201B Conduct local risk control
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locate and apply relevant documentation, policies and procedures
- works effectively with others to undertake and complete conducting of local risk control including:
  - communicating clearly and concisely with others to receive and clarify treatment information
  - communicating clearly and concisely the likelihood and consequence of an identified risk
- demonstrates completion of conducting local risk control that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - identifying 'unacceptable risk' using the acceptability/unacceptability criteria
  - working with others to determine risk controls
  - assessing and determining consequence and likelihood of potential risk
  - controlling risk by selecting and implementing most appropriate treatment
  - reporting written information about risk assessment and treatment implementation

Knowledge Evidence

The candidate must demonstrate knowledge in conducting local risk control through:

- accessing, interpreting and applying the organisation and site requirements and procedures for:

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  - organisation risk management policy, procedure requirements
  - conducting worksite risk management procedures
  - conducting and maintaining worksite communication, reporting and recording procedures
- identifying and assessing hazards, risks, acceptability of risks and controls
- reading, preparing and using worksite safety systems information

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years
Drilling, Coal Mining and Extractive	3-6	3 Years

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(Quarrying)		
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

Links

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RIIRIS301D Apply risk management processes

Modification History

Release	Comment
1	This unit replaces RIIRIS301B Apply risk management processes.
2	Performance Evidence and Knowledge Evidence replaced with correct information.
3	Performance Evidence and Knowledge Evidence amended.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to apply risk management processes in the Resources and Infrastructure Industries.

This unit is appropriate for those working in operational or supervisory roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Elements and Performance Criteria

1. Plan and prepare for risk management	1.1 Access, interpret and apply risk management documentation and ensure the work activity is compliant 1.2 Inspect and analyse work area conditions regularly and systematically to identify potential hazards 1.3 Access, interpret and apply existing procedures to control identified hazards 1.4 Identify hazards not controlled by existing procedures 1.5 Recognise the type and scope of unresolved hazards and their likely impact
2. Assess and identify unacceptable risk	2.1 Consider and determine the likelihood of an event 2.2 Evaluate and determine the consequence of the event

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	2.3 Consider and determine the risk level (likelihood and consequence combined) 2.4 Identify or source the criteria for determining the acceptability/unacceptability of the risk 2.5 Evaluate the risk and identify 'unacceptable risk' status
3. Review risk management documentation	3.1 Monitor and review working instructions 3.2 Seek authority and approval to amend in writing the working instructions 3.3 Seek authority and approval to action amendments to the working instructions
4. Identify and recommend controls	4.1 Identify the range of controls which may eliminate or minimise the risk 4.2 Conduct a detailed analysis of feasible options including the identification of resource requirements 4.3 Select the most appropriate control for dealing with the situation
5. Contribute to the implementation of controls	5.1 Write up the risk management plans selected control in detail, including resource requirements 5.2 Gain authorisation for selected control 5.3 Document and review controls for the job 5.4 Apply procedures to control recognised hazards 5.5 Communicate information on the control and its implementation

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIIRIS301B Apply risk management processes

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Links

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Assessment Requirements for RIIRIS301D Apply risk management processes

Modification History

Release	Comment
1	This unit replaces RIIRIS301B Apply risk management processes.
2	Performance Evidence and Knowledge Evidence replaced with correct information.
3	Performance Evidence and Knowledge Evidence amended.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- obtains and applies relevant documentation, policies and procedures
- implements the requirements, procedures and techniques for the safe, effective and efficient completion of risk management processes including:
  - applying relevant operational information
  - applying common industrial terminology
- works effectively with others to undertake and complete the application of risk management processes that meets all the required outcomes, including:
  - complying with written and verbal reporting requirements and procedures
  - communicating clearly and concisely with others to receive and clarify work instructions
  - communicating clearly and concisely with others to coordinate work activities
  - engaging co-workers, employers and supervisors in the risk management processes
- demonstrates completion of the application of risk management processes that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - applying planning and organising skills to the risk management processes
  - identifying or sourcing criteria to determine unacceptable risk

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- identifying and recognising type and scope of hazards and their impact
- assessing and determining the consequence, likelihood and level of potential risk
- identifying unacceptable risk using the acceptable/unacceptable criteria
- assessing options for appropriate controls and implementing accordingly
- identifying and obtaining required resources
- preparing and maintaining written records and report requirements
- reviewing risk management documentation
- identifying and recommending controls
- contributing to the implementation of controls

Knowledge Evidence

The candidate must demonstrate knowledge of the following when applying the risk management process:

- WHS legislation and regulations
- appropriate resources and infrastructure context and language
- topics or subject areas which are target for assessment and treatment
- site risk management systems and their application
- conventions and requirements for written communications including report writing
- problem solving techniques

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,

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- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

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RIIWHS201D Work safely and follow WHS policies and procedures

Modification History

Release	Comment
1	The unit replaces RIIOHS201A Work safely and follow OHS policies and procedures.
2	Editorial corrections.
3	Amended Application field.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.
5	Editorial correction of a typo to Performance Evidence. No new content.

Application

This unit describes a participant's skills and knowledge required to work safely and follow WHS policies and procedures in the Resources and Infrastructure Industries.

This unit is appropriate for those working in operational roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and Industry sectors. Relevant information must be sourced prior to application of the unit.

Note: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

Elements and Performance Criteria

1. Access and apply site safety procedures	1.1 Access, interpret and apply work health and safety procedures and ensure the work activity is compliant 1.2 Carry out isolation of energy sources and immobilisation of potential energy sources

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	1.3 Locate destinations by interpreting and applying site plans, transport rules and signage 1.4 Identify, act on, and report breaches in site safety
2. Apply personal safety measures	2.1 Select and wear personal protective equipment 2.2 Establish and maintain a clean and tidy safe working area 2.3 Obtain permits and clearances before specialised work is carried out 2.4 Apply safe manual handling procedures 2.5 Identify and apply site procedures for conducting high-risk activities
3. Apply operational safety measures	3.1 Recognise and respond to alarms 3.2 Identify and clarify responsibility in responding to emergency situations 3.3 Apply basic fire fighting techniques 3.4 Identify emergency escape route(s) and procedures
4. Maintain personal wellbeing	4.1 Identify risks to personal wellbeing and recognise preventative strategies 4.2 Identify, act on, and report situations which may endanger others 4.3 Access and explain verbally or in writing the requirements for fitness for duty 4.4 Comply with all work health and safety policies including smoking, alcohol and drug use
5. Identify and report incidents	5.1 Recognise and communicate incident and injury statistics 5.2 Report and prepare written records of incidents and injuries 5.3 Contribute to and participate in incident investigations

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIIOHS201A Work safely and follow OHS policies and procedures

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Assessment Requirements for RIIWHS201D Work safely and follow WHS policies and procedures

Modification History

Release	Comment
1	The unit replaces RIIOHS201A Work safely and follow OHS policies and procedures.
2	Editorial corrections.
3	Amended Application field.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.
5	Editorial correction of a typo to Performance Evidence. No new content.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- demonstrates completion of working safely and following WHS policies and procedures that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - sourcing, interpreting, clarifying and applying site safety information
  - listening carefully to health and safety instructions and information
  - responding to and clarifying information and directions
  - carrying out work instructions that complies with WHS policies and procedures
  - selecting, wearing and caring for personal protective equipment for all activities that require personal protective equipment
  - applying safe lifting and manual handling techniques
  - identify and report on WHS issues to appropriate personnel
  - recognising and following procedure to respond to alarms
  - completing workplace reporting procedures

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Knowledge Evidence

The candidate must possess knowledge of work safely and follow WHS policies and procedures through:

- determining equipment safety requirements
- identifying personal protective equipment
- follows hazardous substances procedures and handling techniques
- location of safety data sheets (SDS) information and their application
- adhering to isolation procedures
- identifying lifting techniques, including for both manual and automated lifting
- locating and complying with WHS procedures
- application of site safety requirements and procedures
- participating in procedures for workplace management of others (e.g. consultation, safety representatives, committees, dispute resolution)
- determining potential of biological effects (e.g. circadian rhythms, sleep, alertness, fatigue, stress, effects of heat stress and hypothermia)
- details of site drug and alcohol policy
- locating and using emergency equipment

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,

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- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

Links

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RIIWHS204D Work safely at heights

Modification History

Release	Comments
1	This unit replaces RIIOHS204A Work safely at heights.
2	Formatting corrections.
3	Inserted Application information.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to work safety at heights in the Resources and Infrastructure Industries.

This unit it appropriate for those working in operational roles where they are required to perform work at heights.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and Industry sectors. Relevant information must be sourced prior to application of the unit.

Note: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

Elements and Performance Criteria

1. Identify work requirements	1.1 Access, interpret and apply height safety procedures and ensure the work activity is compliant 1.2 Inspect site to determine layout and physical condition, condition of structures, prevailing weather conditions, equipment requirements and potential hazards

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	1.3 Adhere to WHS requirements 1.4 Identify, select and check safety equipment for serviceability 1.5 Identify, manage and report potential risks and hazards
2. Identify work procedures and instructions	2.1 Consult with authorised personnel to select materials, tools and equipment and check for serviceability 2.2 Select, wear and care for personal protective equipment 2.3 Inspect/install fall protection and perimeter protection equipment 2.4 Identify approved methods of moving tools and equipment to work area and minimise potential hazards associated with tools at heights 2.5 Ensure safety system has been installed correctly 2.6 Select and install appropriate signs and barricades
3. Access and install equipment	3.1 Consult with authorised personnel to ensure anchor fall protection and associated equipment is correctly fitted and adjusted 3.2 Ensure all required equipment is installed 3.3 Use recommended methods to access work area for people, tools and equipment 3.4 Locate tools and materials to eliminate or minimise the risk of items being knocked down
4. Perform work at heights	4.1 Check access from ground to work area and ensure it is safe 4.2 Keep fall equipment in place and adjusted appropriately for movement during work 4.3 Undertake manual handling of materials and equipment 4.4 Locate materials and equipment ensuring that they are safely secured and distributed 4.5 Check safety system periodically for compliance 4.6 Monitor risk control measures to ensure that they are effective and appropriate 4.7 Reassess risk control measures, as required, in accordance with changed work practices and/or site conditions and undertake alterations
5. Clean up work area	5.1 Consult with authorised personnel to ensure safety system is dismantled and removed 5.2 Clear work area and dispose of or recycle materials 5.3 Clean, check, maintain and store tools and equipment

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Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIIOHS204A Working safely at heights

Links

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Assessment Requirements for RIIWHS204D Work safely at heights

Modification History

Release	Comments
1	This unit replaces RIIOHS204A Work safely at heights.
2	Formatting corrections.
3	Inserted Application information.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- demonstrates completion of working safely at heights that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - accessing, interpreting and applying technical and safety information for working at heights
  - assessing hazards and risk associated with working at heights and implement control methods
  - selecting wearing and caring for personal protective equipment
  - identifying required safety systems including fall protection and associated equipment
  - checking that fitting, adjusting and anchoring of fall protection and associated equipment is correct
  - performing work safely at heights

Knowledge Evidence

The candidate must demonstrate knowledge of the following when working safely at heights:

- names and functions of equipment, components and materials

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- complying with equipment manufacturer's instructions and specifications
- safe shifting and handling of tools and materials
- adhering to statutory and regulatory authority requirements
- the nature of work undertaken at heights
- complying with heights safety systems
- the processes of providing for safe working practices
- using safety equipment/systems and considerations to facilitate working safely at heights
- complying with safe work methods

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years

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Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

Links

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RIIWHS301D Conduct safety and health investigations

Modification History

Release	Comment
1	The unit replaces RIIOHS301A Conduct safety and health investigations.
2	Editorial corrections.
3	Amended Application field.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.
5	Editorial correction to Performance Evidence. No new content.

Application

This unit describes a participant's skills and knowledge required to conduct safety and health investigations in the Resources and Infrastructure Industries.

This unit is appropriate for those working in technical specialist roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and Industry sectors. Relevant information must be sourced prior to application of the unit.

Note: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

Elements and Performance Criteria

1 Determine the objectives	1.1 Access, interpret and apply safety and health investigation procedures and documentation and ensure the work activity is compliant 1.2 Determine the scope of the investigation. Ensure pre- and post-incident timeframe is consistent with all requirements 1.3 Determine the proposed investigation objectives from an

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	analysis of the available information and factors 1.4 Test the proposed objectives and clarify the scope of the investigation 1.5 Ensure the final objectives and scope of the investigation will be achievable within available resources and authority constraints
2 Gather information	2.1 Maintain site security and integrity of evidence in accordance with all requirements 2.2 Plan and prepare for the systematic collection of information 2.3 Schedule information collection and completion to ensure minimum backtracking or repeat actions 2.4 Ensure methods used to collect and examine information, including interviewing and recording, meet all requirements 2.5 Collect, test and organise all appropriate information
3 Evaluate information	3.1 Assess and evaluate information for validity and reliability and organise as evidence to aid decision making 3.2 Undertake further research where information is unclear or inadequate, and rectify 3.3 Analyse the evidence to determine the cause(s) of the incident 3.4 Draw conclusion(s) based on agreed standard 3.5 Ensure the findings address the established factual objectives
4 Identify courses of action	4.1 Frame options for the courses of action 4.2 Ensure options are provided in a form which meets the audience requirements, can be easily understood and enables the selection of the most appropriate course of action 4.3 Ensure the course of action selected will resolve the issues and reduce the probability of recurrence 4.4 Ensure the selected course of action can be implemented in accordance with all requirements
5 Prepare and present investigation reports	5.1 Prepare investigation reports 5.2 Present written and graphical reports clearly and concisely in a format which can be readily understood 5.3 Present the reports to the required audience 5.4 Review the investigation process and pass recommendations for process changes and improvements to the appropriate authority

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Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIIOHS301A Conducting safety and health investigations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIIWHS301D Conduct safety and health investigations

Modification History

Release	Comment
1	The unit replaces RIIOHS301A Conduct safety and health investigations.
2	Editorial corrections.
3	Amended Application field.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.
5	Editorial correction to Performance Evidence. No new content.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant legislation, documentation, policies and procedures
- demonstrates completion of conducting safety and health investigations that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - determining objective and authority of the investigation
  - planning and organising activity to gather evidence
  - undertaking research to gather evidence
  - engaging others in the investigation process
  - questioning and actively listening to those involved in the investigation
  - correctly collecting and maintaining the integrity of evidence
  - identifying and/or confirming the linkages between factors and outcomes, causes and effects and direct/indirect causal relationships
  - drawing conclusions and identifying appropriate course of action to resolve issue
  - writing clearly, concisely and effectively report investigation outcomes and presenting the outcomes to others

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Knowledge Evidence

The candidate must demonstrate knowledge of conducting safety and health investigations:

- topic or subject area which is the target for the investigation
- theory of safety and health investigative research and analysis
- symptoms and possible immediate effects of post-traumatic stress in an investigation situation
- appropriate Industry context
- site procedures and conventions related to safety and health investigations
- site risk management processes and their applications
- conventions and requirements for written communications, including report writing

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

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Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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SIRRINV001 Receive and handle retail stock

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to receive and store retail stock. It requires the ability to check stock quality and quantity against order requirements; store or present stock correctly; and maintain cleanliness of stock-handling areas.

This unit applies to all retail sectors and business sizes from large format stores to small independents. It applies to frontline personnel who have limited autonomy and work under close supervision and guidance of others in frontline operational roles. However; in smaller retail businesses, senior personnel also undertake this function.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Inventory

Unit Sector

Retail

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Maintain stock handling and storage	1.1.Maintain cleanliness of stock handling and storage areas. 1.2.Ensure correct environmental conditions for storage of

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areas.	perishable and other stock to prevent loss or damage as required. 1.3. Remove and dispose of waste to minimise safety risks and environmental impacts. 1.4. Report hazards and potential hazards to relevant personnel to minimise safety risks.
2. Accept stock delivery.	2.1. Check incoming stock quantities against order documentation. 2.2. Inspect incoming stock quality, and accurately report quality issues or damage to relevant personnel. 2.3. Record stock delivery, and report discrepancies with orders as required. 2.4. Unpack and handle stock according to manufacturer instructions and safe manual handing techniques to avoid personal health risk and stock damage. 2.5. Store or display stock promptly in designated location.
3. Replenish stock levels.	3.1. Rotate, replenish and present stock according to organisational requirements for stock levels. 3.2. Record stock waste or shrinkage according to organisational procedures. 3.3. Maintain optimal stock levels on retail shop floor.

Foundation Skills

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed here, along with a brief context statement.

Reading skills to:	• interpret:
	  • plain English documents that outline organisational policies and procedures for stock control
	  • basic order and delivery documentation and stock labels.

Numeracy skills to:	• calculate stock levels.
Planning and organising skills to:	• complete stock control activities in a logical and time efficient sequence.
Technology skills to:	• use stock control technology to aid stock control processes.

Unit Mapping Information

No equivalent unit.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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Assessment Requirements for SIRRINV001 Receive and handle retail stock

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- follow organisational policies and procedures, safe work practices and manufacturer instructions to perform each of the following stock control procedures:
  - receive and process incoming stock
  - store retail stock
  - maintain retail stock levels
  - maintain stock delivery records
- follow organisational stock control policies and procedures to process stock in each of the following situations:
  - stock quality is poor
  - stock quantity errors
  - incorrect stock is delivered
- maintain stock handling and storage areas, according to organisational policies and procedures, when completing the above stock control activities.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in the elements and performance criteria of this unit:

- principles of stock control procedures:
  - rotation and replenishment
  - product life cycle
- organisational stock control policies and procedures for:
  - receiving stock from suppliers
  - recording incoming stock
  - recording and reporting stock discrepancies and quality issues
  - recording stock waste and shrinkage
  - stock quality standards
  - unpacking, storage and display of stock
  - damaged or missing stock

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- key features of retail products that relate to handling and storage:
  - handling techniques to minimise damage
  - general care
  - optimum storage conditions
  - features of damaged or spoiled stock
  - correct disposal methods
- safe manual handing techniques for moving and storing retail stock
- relevant legislation and standards relevant to receiving and storing retail stock.

Assessment Conditions

Skills must be demonstrated in a retail environment. This can be:

- an industry workplace
- a simulated industry environment.

Assessment must ensure use of:

- manufacturer instructions for stock handling and storage
- organisational policies and procedures for stock handling and control
- retail stock display areas
- range of retail stock
- stock control documentation
  - delivery dockets
  - orders
  - reporting documentation
- stock receiving bay or area
- stock storage areas
- assessment activities that allow the individual to:
  - work within commercial speed, timing and productivity
  - manage tasks and contingencies in the context of the job role.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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SIRRINV002 Control stock

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to process stock orders, maintain stock levels, minimise stock losses, manage stocktakes and maintain all documents that relate to the administration of any type of stock.

This unit applies to individuals responsible for stock control. They work within organisational systems and procedures, but make decisions about stock administration and may have responsibility for others.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Inventory

Unit Sector

Retail

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Monitor stock receipt and dispatch.	1.1. Implement organisational policies and procedures for receipt, dispatch and secure storage of stock. 1.2. Allocate tasks and monitor staff to ensure organisational procedures are followed, and documentation is completed

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	correctly. 1.3. Confirm that stock quantity and quality inspections on receipt meet organisational standards. 1.4. Act on variations to quantity and quality of delivered stock. 1.5. Supervise safe stock handling and storage.
2. Maintain stock records.	2.1. Monitor stock and maintain stock at required levels. 2.2. Maintain, monitor and adjust stock reorder cycles as required. 2.3. Provide clear information to team members about individual stock recording responsibilities. 2.4. Maintain stock storage and movement records. 2.5. Record and report stock discrepancies. 2.6. Monitor stock performance and identify and report fast and slow-selling items.
3. Process and follow up orders.	3.1. Process and raise stock orders according to organisational procedures. 3.2. Monitor delivery of stock to ensure agreed deadlines and inventory requirements are met. 3.3. Liaise with suppliers to ensure continuity of supply. 3.4. Resolve routine supply problems or refer to appropriate personnel for action. 3.5. Distribute stock within the organisation according to required allocations. 3.6. Handle routine supply problems or refer to management as required by store policy.
4. Minimise stock losses.	4.1. Regularly check storage of stock and ensure its protection. 4.2. Identify, record and report stock losses. 4.3. Identify avoidable losses and establish reasons for them. 4.4. Recommend solutions and implement procedures to prevent future losses.
5. Coordinate stocktake or cyclical count.	5.1. Explain procedures for stocktake and cyclical counts to team members. 5.2. Allocate stocktaking tasks to individual team members ensuring effective use of staff resources to complete task. 5.3. Provide team members with clear directions for performance of each task. 5.4. Produce accurate reports for management on stocktake data, including discrepancies.

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Foundation Skills

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed here, along with a brief context statement.

SKILLS	DESCRIPTION
Reading skills to:	• interpret supplier purchasing agreements, purchase orders, records of incoming stock and organisational policies and procedures for stock control.

Numeracy skills to:	• calculate:
	  • supplier costs and complex order costs
	  • complex details of stock on hand and stock losses and produce complex numerically-based reports
	• reconcile incoming stock and invoices against purchase orders.

Technology skills to:	• use business technology for inventory management.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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Assessment Requirements for SIRRINV002 Control stock

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- maintain and order stock across one stock cycle according to organisational procedures using all of the following stock processes:
  - receipt
  - dispatch
  - ordering
  - stock level monitoring
  - records maintenance
- produce three different stock control reports
- organise and coordinate one stocktake or cyclical count
- provide clear and correct information to team members involved in stock control processes.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- organisational policies and procedures for:
  - receipt and dispatch of goods, including inspection for quantity and quality
  - stock ordering and reordering
  - stock replenishment
  - stock rotation
  - reporting of stock discrepancies, damage and loss
  - safe transport, handling and storage of goods
  - stock control
  - stocktaking and cyclical counts
  - pricing, labelling and packaging
  - stock security
- key aspects of legislation and codes of practice relevant to stock control:
  - Australian Consumer Law
  - Work Health and Safety (WHS)

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  - manual handling
  - licensing for mechanical movement of stock
- principles of stock control:
  - rotation and replenishment
  - product life cycle
- impact of business planning and sales forecasts on stock control
- types of stock control systems used in the sector
- reasons for stock loss and damage and methods to control these and protect stock.

Assessment Conditions

Skills must be demonstrated in a retail environment. This can be:

- an industry workplace
- a simulated industry environment.

Assessment must ensure access to:

- current plain English regulatory documents distributed by government regulators outlining key aspects of legislation and codes of practice relevant to stock control as listed in Knowledge Evidence
- a computerised stock control system
- stock for use in stock control activities
- organisational policies and procedures for stock control
- team members; these can be:
  - individuals in an industry workplace, or
  - individuals who participate in role plays or simulated activities, set up for the purpose of assessment, in a simulated industry environment.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors.

Links

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SIRRMER003 Coordinate visual merchandising activities

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to coordinate store visual merchandising activities and ensure adherence to organisational standards, policies and procedures for the display of merchandise.

It applies to individuals working in frontline roles in a diverse range of retail industry sectors and business contexts that display retail products for sale. They operate with independence and under limited supervision and guidance from others, and within established organisational policies and procedures.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Merchandising

Unit Sector

Retail

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Coordinate visual merchandise requirements.	1.1. Access and interpret organisational visual merchandising guidelines, and policies and procedures. 1.2. Communicate visual merchandising standards and display

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	requirements to team members. 1.3. Plan appropriate timing for producing and dismantling visual merchandise displays. 1.4. Communicate roles and responsibilities for visual merchandising to team members. 1.5. Plan and coordinate promotional and special event displays as directed by management.
2. Supervise visual merchandise activities.	2.1. Supervise construction and maintenance of displays to achieve balance and visual impact. 2.2. Ensure display information accurately depicts product or service being promoted. 2.3. Ensure displays are completed with minimum disruption to customer service and traffic flow. 2.4. Ensure displays meet organisational standards and visual merchandise guidelines. 2.5. Regularly monitor replenishment of merchandise and rotation of stock and take action to ensure optimal stock levels as required.
3. Review impact of visual merchandise activities.	3.1. Evaluate promotions or special event displays and determine impact on sales results. 3.2. Report on visual merchandising activities to relevant personnel and make suggestions for improvements as required.

Foundation Skills

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed here, along with a brief context statement.

SKILLS	DESCRIPTION
Problem solving skills to:	• overcome difficulties relevant to the display of merchandise.

Unit Mapping Information

No equivalent unit.

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Assessment Requirements for SIRRMER003 Coordinate visual merchandising activities

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- follow merchandising display guidelines, and organisational policies and procedures to coordinate visual merchandise activities for two of the following:
  - an existing merchandise range
  - a new merchandise range
  - a seasonal merchandise range
  - a promotional event
  - discounted merchandise
- for each of the above visual merchandising activities:
  - communicate requirements with team members
  - monitor visual merchandising displays and standards
- report on the effectiveness of the above merchandising activities.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- organisational policies and procedures for:
  - merchandise labelling and pricing
  - required stock levels
  - merchandise rotation and replenishment
- organisational visual merchandise standards and guidelines and their application to visual merchandising activities
- key aspects of relevant industry codes of practice, legislation and statutory requirements for coordinating merchandise presentation:
  - Australian Consumer Law
  - Work Health and Safety (WHS)
- objectives and use of visual merchandise displays
- interpretation of scaled versions of store design, layout and fixture placements
- techniques for creating effective visual merchandise displays:
  - types of displays and their impact

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    - display location
    - display lighting
    - display signage
- fundamental elements and principles of visual design and their use in the display and merchandise of products
- commercial impact of incorrect pricing both favourable and unfavourable:
    - customer complaints
    - profitability
- safe work practices for displaying merchandise with particular emphasis on:
    - safe use of equipment
    - safe manual handling techniques for bending, lifting and shifting heavy items
- product knowledge relevant to visual merchandise activities:
    - price
    - features
    - benefits.

Assessment Conditions

Skills must be demonstrated in a retail environment. This can be:

- an industry workplace
- a simulated industry environment.

Assessment must ensure access to:

- retail merchandise
- display areas
- retail display equipment and props
- product labels and price tickets
- ticketing and pricing equipment
- relevant documentation:
    - organisational visual merchandise display guidelines
    - organisational policies and procedures for:
        - merchandise labelling and pricing
        - required stock levels
        - merchandise rotation and replenishment
    - relevant industry codes of practice, legislation and statutory requirements for coordinating merchandise presentation:
        - Australian Consumer Law
        - Work Health and Safety (WHS)
- team members; these can be:
    - individuals in an industry workplace, or

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- individuals who participate in role plays or simulated activities, set up for the purpose of assessment, in a simulated industry environment.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors.

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SIRRRTF001 Balance and secure point-of-sale terminal

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to balance and reconcile a register or terminal in a retail environment, clear registers, count money, calculate non cash transactions, and reconcile and record takings.

It applies to individuals working in frontline operational roles in a diverse range retail industry sectors and business contexts. They operate with some independence under general supervision and guidance from others, and within established organisational policies and procedures.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Retail Financials

Unit Sector

Retail

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Balance and secure takings.	1.1. Perform register or terminal balance at designated times. 1.2. Separate cash float from takings prior to balancing and secure takings.

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	1.3.Supply change to register or terminal and accurately record. 1.4.Obtain and interpret register or terminal reading or print-out. 1.5.Secure cash and non cash documents according to organisational procedures.
2. Reconcile takings.	2.1.Count cash accurately. 2.2.Calculate non cash documents accurately. 2.3.Determine balance between register or terminal reading and sum of cash and non cash transactions. 2.4.Investigate or report discrepancies between register or terminal reading and sum of cash and non cash transactions to relevant personnel. 2.5.Record takings and file records according to organisational procedures.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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Assessment Requirements for SIRRRTF001 Balance and secure point-of-sale terminal

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- consistently apply organisational policies and procedures to:
  - balance a register or terminal on three occasions with complete accuracy
  - reconcile three different sets of takings comprising both cash and non-cash with complete accuracy
  - identify and resolve three different types of balancing discrepancies
  - process three different types of takings according to organisational policies and procedures.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- role and importance of the balancing process
- techniques for identifying and resolving discrepancies
- functions and procedures for operating point-of-sale equipment:
  - opening and closing
  - balancing
  - clearance of terminal and transference of tender
  - recording takings
  - consumables required by system
  - security
- cash handling procedures:
  - counting cash
  - handling cash floats
  - change required, denominations of change and tendering change
  - security
- organisational policies and procedures for non-cash transactions:
  - credit cards
  - EFTPOS

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  - vouchers
- organisational policies and procedures for:
  - exchanges
  - refunds
  - lay-by
  - cash handling
  - cash float
  - operation of point-of-sale equipment
  - register or terminal balance
  - security of cash and non cash transactions.

Assessment Conditions

Skills must be demonstrated in a retail environment. This can be:

- an industry workplace
- a simulated industry environment.

Assessment must ensure access to:

- organisational policies and procedures related to point-of-sale
- point-of-sale equipment and consumables
- financial transaction documentation for non-cash sales
- cash
- assessment activities that allow the individual to work with commercial speed, timing and productivity.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors.

Links

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SIRXCEG001 Engage the customer

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to interact and communicate with a diverse range of customers to assist with basic enquiries and contribute to a service culture.

It applies to individuals working in frontline customer service roles in a diverse range of industry sectors and business contexts. They operate with some independence under general supervision and guidance from others, and within established organisational policies and procedures.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Customer Engagement

Unit Sector

Cross-Sector

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Engage customers.	1.1. Greet customers in a polite and friendly manner within designated response times and make them a priority over other workplace duties.

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	1.2. Clearly communicate with customers using appropriate verbal and non-verbal communication.
	1.3. Adapt communication style to appropriately communicate with customers from diverse backgrounds.
2. Assist customers.	2.1. Identify and act on opportunities to assist customers and be available to assist customers when needed.
	2.2. Question and actively listen to customers to determine their needs.
	2.3. Resolve routine customer problems according to individual responsibility level and organisational policies and procedures.
	2.4. Address general customer enquiries and provide accurate information in a clear and courteous manner.
3. Contribute to a service culture.	3.1. Act in line with organisational service standards to ensure quality customer service.
	3.2. Show interest in customer's needs and maintain a welcoming customer environment free of complacency.
	3.3. Seek assistance from relevant personnel when customer's needs are beyond scope of own responsibility.
	3.4. Identify and take opportunities to improve customer service standards.
	3.5. Refer customer service issues and feedback to relevant personnel for action.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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Assessment Requirements for SIRXCEG001 Engage the customer

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- contribute to a customer service culture by providing customer service, in line with organisational service standards, across four different customer interactions
- for the above four customer interactions, individually or cumulatively involve:
  - customers from diverse backgrounds
  - resolution of two routine customer problems
  - provision of accurate information to address two general customer enquiries
  - referral of unresolved customer enquiry
  - use of effective communication techniques and positive body language.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- organisational service standards and procedures for:
  - designated customer service response times
  - interacting with customers
  - solving routine customer problems
  - providing information to customers
- basic principles for achieving positive customer service
- verbal and non-verbal communication
- techniques for effective communication:
  - open and closed questioning
  - paraphrasing
  - effective listening
  - voice tonality and volume
- body language and its role in customer service
- effective communication strategies for interacting with customers of diverse backgrounds
- commercial impact of:
  - positive customer service
  - poor customer service

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- organisational information and sources of information to assist customer with customer enquiries.

Assessment Conditions

Skills must be demonstrated in a services industry environment. This can be:

- an industry workplace
- a simulated industry environment.

Assessment must ensure access to:

- relevant documentation:
  - organisational service standards and procedures for:
    - designated customer service response times
    - interacting with customers
    - solving routine customer problems
    - providing information to customers
- customers from a diverse range of backgrounds; these can be:
  - individuals in an industry workplace, or
  - individuals who participate in role plays or simulated activities, set up for the purpose of assessment, in a simulated industry environment.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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SIRXRSK002 Maintain store security

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to maintain store security in a retail environment.

It applies to individuals working in frontline management roles in a diverse range of industry sectors and business contexts. They operate independently with some responsibility for others and decision making, and within established organisational policies and procedures.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Risk Management and Security

Unit Sector

Cross-Sector

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Monitor and maintain store security.	1.1. Implement organisational policies and procedures to ensure store security is maintained. 1.2. Monitor and review security procedures continually and act on opportunities to improve store security. 1.3. Maintain security of merchandise, cash, points of sale and

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	keys. 1.4. Ensure store security equipment is used and in correct working order. 1.5. Report matters impacting store security to relevant personnel. 1.6. Document breaches of security as required.
2. Facilitate security awareness.	2.1. Inform team members of organisational policies and procedures for security. 2.2. Provide team members with feedback on their implementation or non-implementation of security procedures. 2.3. Provide team members with ongoing supervision and training to facilitate security awareness.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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Assessment Requirements for SIRXRSK002 Maintain store security

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- maintain store security over three different work shifts by:
  - monitoring adherence to organisational security policies and procedures
  - responding to two occurrences of non-adherence to security policies and procedures
  - communicating security policies and procedures to one team member
  - ensuring security equipment is utilised and in correct working order
  - reporting on opportunities for improved store security.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- organisational policies and procedures for:
  - use of security equipment
  - suspicious customer behaviour
  - suspicious team member behaviour
  - armed robbery
  - cash and non-cash security
  - merchandise security
  - theft
  - responding to security breaches
  - reporting security risks and breeches
  - surveillance of merchandise
  - personal security
  - general store security
  - team members' security training
  - security for opening and closing premises
  - reporting problems and faults
  - security of visitors, sales representatives, contractors and vendors
  - security risks likely to endanger customers or team members

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- legislation as relevant to store security and own level of responsibility:
  - privacy laws
  - Australian Consumer Law
  - reporting procedures
- impacts of security breaches on individuals and organisation:
  - emotional distress
  - financial loss
  - commercial impacts
- common security risks within the retail workplace and techniques to:
  - identify risk
  - minimise risk
- types of store alarms and security systems used in industry.

Assessment Conditions

Skills must be demonstrated in a services industry environment. This can be:

- an industry workplace
- a simulated industry environment.

Assessment must ensure access to:

- relevant equipment:
  - alarm systems
  - surveillance equipment
  - point-of-sale equipment
  - communication equipment
- relevant documentation:
  - current plain English regulatory documents distributed by government regulators legislation as relevant to store security and own level of responsibility as listed in Knowledge Evidence
  - organisational policies and procedures as listed in the Knowledge Evidence
- customers and team members; these can be:
  - individuals in an industry workplace, or
  - individuals who participate in role plays or simulated activities, set up for the purpose of assessment, in a simulated industry environment.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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SIRXSLS002 Follow point-of-sale procedures

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to follow point-of-sale work systems, process transactions and complete sales.

It applies to individuals working in frontline operational roles in a diverse range of industry sectors and business contexts. They operate with some independence under general supervision and guidance from others, and within established organisational policies and procedures.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Sales

Unit Sector

Cross-Sector

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Follow point of sale work systems.	1.1. Open and close point-of-sale terminal at designated times and according to organisational procedures. 1.2. Clear point-of-sale terminal and transfer cash. 1.3. Handle cash according to organisational policies and

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	procedures. 1.4. Maintain supplies of change at agreed levels in point-of-sale terminal to agreed levels. 1.5. Maintain adequate supplies of consumables.
2. Process point-of-sale transactions.	2.1. Identify transaction type and required procedure to be followed. 2.2. Correctly interpret sale price information. 2.3. Make accurate calculations for pricing and collection of payment. 2.4. Enter accurate sale information into point-of-sale equipment. 2.5. Confirm price to customer and check customer payment against sale value. 2.6. Provide correct change for cash payments. 2.7. Identify transaction errors, follow procedures for resolution and complete accurate records.
3. Complete sales.	3.1. Generate and complete documentation associated with the sale. 3.2. Confirm and process any purchase follow up activities. 3.3. Acknowledge and thank customer in line with organisational policy.

Foundation Skills

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed here, along with a brief context statement.

SKILLS	DESCRIPTION
Numeracy skills to:	• interpret numerical information from various sources and calculate accurately with or without the use of a calculator. • measure or estimate quantities to calculate costs. • calculate percentage discounts.

Unit Mapping Information

No equivalent unit.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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Assessment Requirements for SIRXSLS002 Follow point-of-sale procedures

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- follow procedures for set up, maintenance and close of point-of-sale area/terminal on three different occasions
- perform three point-of-sale transactions for each of the following:
  - cash sales
  - non-cash sales
- perform three point-of-sale transactions for each of the following:
  - refunds
  - exchanges
- make six accurate financial calculations relating to product pricing that individually or cumulatively involve:
  - multiple products
  - products of varying prices
  - products with percentage discounts
- follow procedures to complete four sales that require post purchase activity.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- organisational policies and procedures for:
  - exchanges
  - refunds
  - lay-by
- basic key aspects of legislation that impact point-of-sale activities:
  - Australian Consumer Law
- features of products sold by the organisation
- functions and procedures for operating point-of-sale equipment:
  - opening and closing
  - clearance of terminal and transference of tender

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  - recording takings
  - consumables required by system
  - security
- cash handling procedures:
  - counting cash
  - handling cash floats
  - change required, denominations of change and tendering change
  - security
- procedures for non-cash transactions:
  - credit cards
  - EFTPOS
  - vouchers
- types of purchase follow up activities and associated organisational policies and procedures:
  - placing of orders
  - delivery
  - issuing of invoices
  - issuing of receipts
  - wrapping and packing.

Assessment Conditions

Skills must be demonstrated in a service industries environment. This can be:

- an industry workplace
- a simulated industry environment.

Assessment must ensure access to:

- organisational policies and procedures for point-of-sale activities
- current plain English regulatory documents distributed by government regulators outlining key aspects of legislation that impact point-of-sale activities as listed in the Knowledge Evidence
- point-of-sale equipment and consumables
- financial transaction documentation for non-cash sales
- cash
- assessment activities that allow the individual to work with commercial speed, timing and productivity.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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SIRXWHS003 Maintain workplace safety

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to ensure organisational policies and procedures and legislative requirements are adhered to in the workplace by monitoring and coordinating workplace health and safety practices.

It applies to individuals working in frontline management roles in a diverse range of industry sectors and business contexts. They operate independently with some responsibility for others and decision making, and within established organisational policies and procedures.

This unit incorporates the requirement, under state and territory Work Health and Safety (WHS) legislation, for businesses to take a systematic approach to managing the safety of their workers and anyone else in the workplace.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Pre-requisite Unit

SIRXWHS002 Contribute to workplace health and safety

Competency Field

Work Health and Safety

Unit Sector

Cross-Sector

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

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1. Facilitate team awareness of work health and safety.	1.1. Communicate relevant work health and safety legislation, and organisational policies and procedures to team members. 1.2. Make all current work health and safety information readily accessible to staff. 1.3. Demonstrate adherence to work health and safety to reinforce information. 1.4. Regularly provide team members with information on identified hazards and risk control procedures
2. Involve team members in work health and safety matters.	2.1. Provide opportunities for team members to consult and contribute to work health and safety issues and practices. 2.2. Resolve issues raised by team members promptly or refer to relevant personnel.
3. Maintain a safe work environment.	3.1. Monitor team adherence to work health and safety requirements, and arrange work health and safety training as required. 3.2. Implement organisational policies and procedures for identifying, preventing and reporting potential hazards. 3.3. Take prompt action to address non-compliance with procedures and safe work practices. 3.4. Investigate unsafe or hazardous events, identify causes, and report inadequacies in risk control measures or resource allocation for risk control to relevant personnel.
4. Maintain work health and safety records.	4.1. Complete and maintain work health and safety records according to organisational policies and procedures and legislative requirements. 4.2. Use information from records to identify hazards and monitor risk control procedures. 4.3. Provide feedback to relevant personnel on workplace health and safety and areas for improvement.

Foundation Skills

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed here, along with a brief context statement.

SKILLS	DESCRIPTION
Reading skills to:	• interpret unfamiliar and complex materials describing regulatory requirements for work health and safety management and organisational policies and procedures.
Writing skills to:	• report on work health and safety practices, including recommendations for change and complete accurate records for

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	regulatory compliance.
Oral communication skills to:	• conduct sometimes complex work health and safety consultation activities • explain all work health and safety procedures and information on safe work practices.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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Assessment Requirements for SIRXWHS003 Maintain workplace safety

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- implement and monitor adherence to workplace health and safety requirements across three different work periods by:
  - identifying non-compliance and tasking appropriate action
  - providing feedback to team members relevant to work health and safety
  - coordinating a work health and safety consultative processes
  - monitor the effectiveness of the work health and safety procedures:
    - required adjustments
    - team member training needs
  - demonstrating correct procedure for applying work health and safety to a work activity
- follow organisational policies and procedures to conduct a work health and safety investigation of one unsafe situation or hazardous event
- complete all required documentation and reporting for the above work health and safety situation or event.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- organisational policies and procedures for:
  - manual handling and safe lifting
  - emergency procedures including fire, flood and cyclone
  - unsafe or hazardous goods
  - handling and storage
  - waste disposal
  - bomb threat procedures
  - store evacuation
  - accidents, sickness and injury
  - dangerous customers
  - recall and contamination
- relevant Work Health and Safety (WHS) legislation and codes of practice

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- hierarchy of risk control
- use of personal protective equipment
- location of nearest first aid assistant or facility
- manual handling and safe lifting techniques
- possible fire and safety hazards
- communication techniques to clearly communicate work health and safety information
- reporting procedures for incidents and hazards
- use of safety alarms, fire extinguishers and emergency exits.

Assessment Conditions

Skills must be demonstrated in:

- an industry workplace
- a simulated industry environment.

Assessment must ensure access to:

- relevant work health and safety equipment
- relevant documentation:
  - Work Health and Safety (WHS) legislation
  - organisational policies and procedures for work health and safety
  - incident reporting forms
  - WHS records
- team members; these can be:
  - individuals in an industry workplace, or
  - individuals who participate in role plays or simulated activities, set up for the purpose of assessment, in a simulated industry environment.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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SISSPAR006 Prepare and present athlete sponsorship proposals

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to develop sponsorship proposals for athletes. It focuses on preparing and presenting sponsorship proposals to potential sponsors.

This unit applies to athletes, sport developers and sport administrators in the Australian sport industry.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Participation

Unit Sector

Sport

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research potential sponsors.	1.1. Set sponsorship objectives to complement sport-specific needs of athletes. 1.2. Research and interpret industry information to identify potential sponsors aligned to sponsorship objectives. 1.3. Research and analyse sponsorship criteria to assess athlete eligibility. 1.4. Use written and verbal communication to approach

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	potential sponsors and establish and build rapport.
2. Develop sponsorship proposals.	2.1. Research potential sponsors to identify sponsor requirements and sponsorship history. 2.2. Plan, develop and document sponsorship proposal content to meet sponsorship objectives and meet sponsor requirements. 2.3. Identify and consult with sources of support in the development and documentation of sponsorship proposals. 2.4. Submit sponsorship proposals according to sponsor requirements.
3. Present sponsorship proposals to potential sponsors.	3.1. Organise and confirm meeting arrangements with potential sponsors. 3.2. Prepare sponsorship proposal presentations for sponsor meetings. 3.3. Present sponsorship proposal presentations to potential sponsors. 3.4. Seek and respond to feedback arising from sponsorship proposal presentations.

Foundation Skills

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed *here, along with a brief context statement.*

SKILLS	DESCRIPTION
Writing skills to:	• approach and respond to sponsors in writing • document sponsorship proposals in the required detail and format.
Oral communication skills to:	• ask open and closed questions and actively listen.
Numeracy skills to:	• interpret dates, times and monetary amounts in sponsorship information • estimating and calculating sponsorship value.
Initiative and enterprise skills to:	• identify and act on sponsorship opportunities.
Planning and organising skills to:	• develop sponsorship proposals within specific timelines • organise time and resources to develop sponsorship proposals and present to potential sponsors.

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Technology skills to:

- use the internet to source sponsorship information.

Unit Mapping Information

SISSCOP306A Prepare a sponsorship proposal

Links

Companion Volume Implementation Guides - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1ca50016-24d2-4161-a044-d3faa200268b

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Assessment Requirements for SISSPAR006 Prepare and present athlete sponsorship proposals

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and **p**erformance criteria of this unit in the context of the job role, and:

- prepare and present one sponsorship proposal for an athlete in a specific sport.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- organisational policies and procedures applicable to preparing and presenting sponsorship proposals
- types of sponsorship in sport
- types of sponsorship objectives
- benefits of sponsorship:
  - sponsor:
    - sales increase
    - customer loyalty
    - brand awareness
    - new market development
    - new product launch
    - image change
    - community relations
  - athlete:
    - financial stability
    - access to resources and facilities
    - profile
    - contacts
    - media exposure
    - public awareness
- types of sponsorship criteria:
  - potential to target market audiences
  - relevance to customer base and sales

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    - duration of sponsorship
- types of contractual obligations:
    - media commitments
    - appearances
    - charity work
- sources of supports
- sponsorship proposal requirements:
    - sport-specific background information:
        - history of the sport
        - demographics of the sport
        - prospective audience for the sport
        - membership of the sport
        - current programs in the sport
        - future goals for the sport
        - annual reports
    - format of proposal
    - presentation of proposal
    - dates for submission of proposals
    - timeframe and methodology
    - performance indicators:
        - financial
        - attendance
        - publicity gained
        - testimonials
    - rights and responsibilities of sponsorship parties:
        - naming rights
        - merchandising and branding
        - personal appearances
        - media exposure
        - termination of sponsorship
        - legal responsibilities
        - athlete behaviour
        - shareholder interest
        - conflict of interest
        - contractual obligations
        - financial reporting
    - submission requirements
- tax implications of sponsorship.

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Assessment Conditions

Skills must be demonstrated in:

- a sport environment. This can be a workplace or simulated environment.

Assessment must ensure access to:

- sponsorship proposal template
- sponsorship presentation template
- organisation policies and procedures applicable to preparing and presenting sponsorship proposals
- computer with access to the internet.

- Assessment must ensure use of:
- sources of support and a potential sponsor.

Assessors must satisfy the Standards for Registered Training Organisations requirements for assessors.

Links

Companion Volume Implementation Guides - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1ca50016-24d2-4161-a044-d3faa200268b

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SITXMPR006 Obtain and manage sponsorship

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to obtain and manage sponsorship for a business activity, product, service or event. It requires the ability to determine sponsorship requirements, source and negotiate with potential sponsors and manage sponsorship arrangements.

The unit applies to any tourism, travel, hospitality or event sector where sponsorship is sought to support business or community activities. Sponsorship may relate to a one-off activity, such as an event, or to ongoing operations, such as sponsorship of a particular service.

It applies to senior coordinators and managers who operate independently, have responsibility for others and are responsible for making a range of financial and operational decisions. They may work under the overall guidance of event organising committees.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Marketing and Public Relations

Unit Sector

Cross-Sector

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential	Performance criteria describe the performance needed to

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outcomes.	demonstrate achievement of the element.
1. Determine sponsorship requirements and opportunities.	1.1. Identify sponsorship requirements in consultation with colleagues. 1.2. Develop targets for sponsorship based on financial parameters of activity. 1.3. Identify items, activities or projects to be sponsored to meet organisational needs. 1.4. Identify potential sponsors based on potential sponsor appeal, nature of the activity and previous approaches.
2. Source sponsorship.	2.1. Develop sponsorship materials in a clear, concise and professional format to include a full breakdown of costs and benefits. 2.2. Distribute and present sponsorship materials according to agreed targets. 2.3. Undertake follow up promotion and negotiation with potential sponsors. 2.4. Discuss and negotiate additional opportunities with sponsor. 2.5. Make written sponsor contracts or agreements to include full details of commitments made by both parties.
3. Service sponsors.	3.1. Brief colleagues on details of sponsorship arrangements. 3.2. Organise activities according to sponsorship agreement, ensuring all agreements are honoured. 3.3. Monitor and evaluate activities and make required adjustments. 3.4. Provide and request feedback from sponsor. 3.5. Identify and action opportunities to enhance value of involvement for sponsors and benefits for the organisation. 3.6. Maintain and distribute accurate and current sponsorship documentation throughout the process. 3.7. Liaise and follow-up with sponsor to initiate future cooperative approaches.

Foundation Skills

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed here, along with a brief context statement.

SKILLS	DESCRIPTION

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Reading skills to:	• read and interpret details of the business activities or projects to be sponsored and complex sponsorship contracts or agreements.
Writing skills to:	• prepare sponsorship materials and agreements expressing complex business ideas and proposals.
Oral communication skills to:	• liaise with sponsors and manage their participation.
Numeracy skills to:	• evaluate budgets and interrogate or use financial data to inform sponsorship activities.
Problem-solving skills to:	• evaluate a potential sponsor's best fit with the business activities or projects • monitor activities, identify sponsorship servicing deficiencies, and make required adjustments.
Initiative and enterprise skills to:	• identify and action opportunities to obtain sponsorship.
Technology skills to:	• design effective sponsorship materials and proposals.

Unit Mapping Information

SITXMPR501 Obtain and manage sponsorship

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=68c40a93-e51d-4e0f-bc06-899dff092694

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Assessment Requirements for SITXMPR006 Obtain and manage sponsorship

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- determine sponsorship requirements for at least two business activities, products, services or events, and obtain sponsorship
- develop clear, concise and professional proposals for the above business activities, products, services or events, including:
  - electronic presentation
  - printed promotional material
- monitor and manage the above sponsorship arrangements for the period of the sponsorship contract
- follow organisational practices and protocols when managing sponsorship activities
- demonstrate effective communication and negotiation with sponsors.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- particular industry sector and business type:
  - business activities or events which would appeal to sponsors
  - potential sponsorship opportunities and sources of finance
- protocols for sponsor contact and accessing sponsorship opportunities
- packages that can be offered to sponsors
- formats for and inclusions of sponsorship proposals
- sponsorship documentation:
  - activity reports or schedules
  - contracts
  - feedback documentation
  - financial records
- features of sponsorship contracts and agreements:
  - legal requirements to supply services as contracted and ramifications of failure to comply
  - sponsor reporting expectations and requirements.

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Assessment Conditions

Skills must be demonstrated in an operational tourism, travel, hospitality or events business with which a sponsor can be involved. This can be:

- an industry workplace
- a simulated industry environment.

Assessment must ensure access to:

- computers, printers and software packages to design effective sponsorship proposals
- current commercial sponsorship contract templates
- sponsors to allow the individual to communicate, negotiate and manage sponsorship arrangements; these can be:
  - those in an industry workplace who are assisted by the individual during the assessment process; or
  - individuals who participate in role plays or simulated activities, set up for the purpose of assessment, in a simulated industry environment operated within a training organisation.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=68c40a93-e51d-4e0f-bc06-899dff092694

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TAEDEL301 Provide work skill instruction

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Application

This unit describes the skills and knowledge required to conduct individual and group instruction, demonstrate work skills and assess the success of training and one's own training performance, using existing learning resources in a safe and comfortable learning environment.

It emphasises the training as being driven by the work process and context, and applies to a person working under supervision as a work skill instructor in a wide range of settings not restricted to training organisations,

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Delivery and facilitation

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Organise instruction and demonstration	1.1 Gather information about learner characteristics and learning needs 1.2 Confirm a safe learning environment 1.3 Gather and check instruction, demonstration objectives, and seek assistance if required 1.4 Access and review relevant learning resources and learning

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ELEMENT	PERFORMANCE CRITERIA
	materials for suitability and relevance, and seek assistance to interpret the contextual application 1.5 Organise access to necessary equipment or physical resources required for instruction and demonstration 1.6 Notify learners of details regarding the implementation of the learning program and/or delivery plan
2. Conduct instruction and demonstration	2.1 Use interpersonal skills with learners to establish a safe and comfortable learning environment 2.2 Follow the learning program and/or delivery plan to cover all learning objectives 2.3 Brief learners on any workplace health and safety (WHS) procedures and requirements prior to, and during, training 2.4 Use delivery techniques to structure, pace and enhance learning 2.5 Apply coaching techniques to assist learning 2.6 Use communication skills to provide information, instruct learners and demonstrate relevant work skills 2.7 Provide opportunities for practice during instruction and through work activities 2.8 Provide and discuss feedback on learner performance to support learning
3. Check training performance	3.1 Use measures to ensure learners are acquiring, and can use, new technical and generic skills and knowledge 3.2 Monitor learner progress and outcomes in consultation with the learner 3.3 Review relationship between the trainer/coach and the learner, and adjust to suit learner needs
4. Review personal training performance	4.1 Reflect upon personal performance in providing instruction and demonstration, and document strategies for improvement 4.2 Maintain, store and secure learner records, according to organisational and legal requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Learning	4.1	• Reflects on practice to improve
Reading	1.1, 1.3, 1.4, 2.2	• Sources and interprets processes and procedures, learning resources and information relevant to providing a work instruction and delivery
Writing	1.4, 1.6, 2.3, 2.6, 2.8, 3.2, 4.1, 4.2	• Accurately maintains learner records and documentation appropriate to the learning context and audience
Oral Communication	1.1, 1.6, 2.3, 2.4, 2.6	• Uses appropriate communication strategies to engage, build rapport, provide instruction, monitor progress and provide feedback to individuals or groups
Interact with others	1.2, 1.3, 2.1, 2.5, 2.8, 3.2	• Recognises the importance of consultation and negotiation while collaborating to confirm strategy and achieve required outcomes • Asks questions in order to clarify understanding, and to provide and seek feedback • Builds rapport to establish effective working relationships and to achieve effective outcomes
Get the work done	1.1-1.6, 2.1-2.8, 3.1-3.3, 4.1, 4.2	• Organises and completes work according to defined requirements, taking responsibility for some decisions and sequencing tasks to achieve efficient outcomes • Identifies and responds to potential risks, problems and opportunities for improvement and considers options for different approaches

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
TAEDEL301 Provide work skill instruction	TAEDEL301A Provide work skill instruction	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3

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Assessment Requirements for TAEDEL301 Provide work skill instruction

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Performance Evidence

The candidate must show evidence of the ability to complete tasks outlined in the elements and performance criteria of this unit, including:

- carrying out a minimum of three training sessions, involving demonstrating and instructing particular work skills for at least two different individuals or small groups, with each session addressing:
  - different learning objectives
  - a range of delivery techniques and effective communication skills appropriate to the audience.

Knowledge Evidence

The candidate must be able to demonstrate essential knowledge to effectively complete the task outlined in the elements and performance criteria of this unit. This includes knowledge of:

- learner characteristics and needs
- the content and requirements of the relevant learning program, and/or the delivery plan
- the sources and availability of relevant learning resources and learning materials
- the content of relevant learning resources and learning materials
- training techniques that enhance learning, and when to use them
- introductory knowledge of learning principles and learning styles
- key workplace health and safety (WHS) issues in the learning environment, including:
  - roles and responsibilities of key personnel
  - responsibilities of learners
  - relevant policies and procedures, including hazard identification, risk assessment, reporting requirements, safe use of equipment and emergency procedures
  - risk controls for the specific learning environment.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Conditions must be typical of those experienced in the training and assessment environment and include access to any necessary workplace documents.

Assessors must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3

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TAEDEL404 Mentor in the workplace

Modification History

Release	Comments
Release 1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Application

This unit describes the skills and knowledge required to establish and develop a professional mentoring relationship with an individual in a workplace.

It applies to workplace supervisors or other work colleagues who work under limited supervision and who have responsibility for mentoring one or more individuals in the workplace. This may include, but is not limited to, those who mentor an apprentice or trainee employed by, or undertaking a work placement within, an organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Delivery and facilitation

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop a mentoring plan	1.1 Identify scope and boundaries of the mentoring relationship according to organisational procedures 1.2 Document mentoring plan in accordance with organisational requirements 1.3 Establish ground rules and negotiate realistic expectations 1.4 Establish and maintain confidentiality of the relationship in

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ELEMENT	PERFORMANCE CRITERIA
	accordance with legislation, policy and procedures
2. Facilitate mentoring relationship	2.1 Develop learner's confidence, self-esteem, respect and trust in the mentoring relationship 2.2 Share personal experiences and knowledge with the person being mentored according to agreed objectives 2.3 Support the person being mentored to develop and use skills in problem solving and decision making 2.4 Use personal and professional networks to assist the person being mentored 2.5 Provide information, and guidance to enhance engagement in the workplace 2.6 Use techniques for resolving differences without damaging the relationship, and obtain assistance according to organisational policy and procedures
3. Monitor mentoring relationship	3.1 Provide planning assistance and guidance as requested by the person being mentored in a form and style to suit their requirements 3.2 Provide feedback to the person being mentored on progress towards achieving the expectations and goals of the mentoring process 3.3 Recognise and discuss changes in the mentoring relationship with appropriate stakeholders 3.4 Negotiate and manage closure of the mentoring arrangement once objectives have been met
4. Evaluate effectiveness of mentoring	4.1 Establish and discuss benefits gained from the mentoring process 4.2 Reflect on and articulate the personal benefits gained from providing mentoring 4.3 Identify and report the outcomes of the mentoring arrangement and the benefits to the organisation according to organisational policy and procedures to improve the mentoring system or program

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.1, 1.4	• Sources and interprets texts relevant to mentoring context, including organisational policies and learner information
Writing	1.1, 1.3, 2.5, 3.1, 3.2, 4.3	• Develops content and documents information relevant to mentoring plan
Oral Communication	2.4, 3.3, 4.1, 4.2, 4.3	• Uses appropriate communication techniques to build rapport, trust, engagement and provide guidance and feedback
Navigate the world of work	1.1, 1.4, 2.6, 4.3	• Follows legislative requirements, organisational protocols, policies and procedures in workplace mentoring
Interact with others	1.2, 2.1-2.3, 2.5, 2.6, 3.1, 3.2, 3.4	• Builds rapport using collaboration with others to achieve joint outcomes and effective interaction • Provides mentoring and role modelling to achieve agreed outcomes • Cooperates and consults with others to clarify understanding and seek feedback
Get the work done	1.1-1.4, 2.1-2.6, 3.1-3.4, 4.1-4.3	• Plans, organises and completes work according to defined requirements taking responsibility for decisions and sequencing tasks to achieve efficient outcomes • Identifies and responds to problems, considering options for different approaches

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
TAEDEL404 Mentor in the workplace	TAEDEL404 A Mentor in the workplace	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3

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Assessment Requirements for TAEDEL404 Mentor in the workplace

Modification History

Release	Comments
Release1	This version first released with *TAE Training and Education Training Package Version 2.0.*

Performance Evidence

The candidate must show evidence of the ability to complete tasks outlined in elements and performance criteria of this unit, including:

- preparing a mentoring plan between the mentor and mentee that sets out clear objectives for a mentoring relationship that will last at least one year
- facilitating at least three mentoring sessions
- documenting information on sessions, including comments and notes from both mentor and mentee.
-

Knowledge Evidence

The candidate must be able to demonstrate essential knowledge to effectively complete the task outlined in the elements and performance criteria of this unit. This includes knowledge of:

- relevant policy, legislation, codes of practice and national standards likely to impact on the provision of workplace mentoring, including training contracts and responsibilities of employer, registered training organisation (RTO) and funding body where they exist
- mentoring methodologies and strategies
- learning theories in relation to mentoring
- strategies for working with a mentee including encouraging self reflection, confidence and the building of rapport
- acceptable behaviour in the mentoring relationship
- equal employment opportunity, equity and diversity principles
- how a mentor can support the mentee's employer to meet its WHS obligations for the mentee.
-

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Conditions must be typical of those experienced in the training and assessment environment and include access to:

- documentation of any existing training plan or contract if applicable to the mentoring relationship.

Assessors must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=35337905-785d-4f93-8777-e9991ad4c6c3

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TLIA2012 Pick and process orders

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to pick and process orders in accordance with relevant codes, regulations and workplace requirements within the transport and logistics industry.

It includes identifying workplace order picking processes, policies and procedures; picking and despatching orders; and recording stock levels.

Work is performed under some supervision generally within a team environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

A – Handling Cargo/Stock

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Identify workplace order picking processes, policies	1.1 Workplace procedures for order picking and related workplace documentation are interpreted
	1.2 Stock allocation and location systems are identified and

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	and procedures		located
		1.3	Appropriate manual handling equipment is selected in accordance with work health and safety (WHS)/occupational health and safety (OHS) regulations and workplace procedures
2	**Pick and despatch an order**	2.1	Work requirements are planned and appropriate equipment and documentation is assembled
		2.2	Warehouse zones where required products are stored, are identified and located
		2.3	Pick path is established
		2.4	Appropriate pallet/s for orders are selected and stacked to minimise stock damage and to maximise stability, as required
		2.5	Products are selected and consolidated
		2.6	Products/pallets are located in despatch areas
		2.7	Products are assembled to meet workplace schedules
		2.8	Orders are consolidated, secured, arranged and placed in storage zones in accordance with schedules
3	**Record stock levels**	3.1	Storage areas are checked and stocks are noted for replenishment in accordance with workplace procedures
		3.2	Workplace records are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

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Unit Mapping Information

This unit replaces and is equivalent to TLIA2012A Pick and process orders.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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Assessment Requirements for TLIA2012 Pick and process orders

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying precautions and required action to minimise, control or eliminate hazards that may exist when picking and processing orders
- applying relevant legislation and workplace procedures
- communicating and working effectively with others when picking and processing orders
- completing documentation related to picking and processing orders
- estimating the size, shape and special requirements of goods/loads
- identifying relevant stock and goods coding and labelling, including Australian Dangerous Goods (ADG) and International Maritime Dangerous Goods (IMDG) markings
- monitoring work activities in terms of planned schedule
- operating and adapting to differences in equipment in accordance with standard operating procedures
- reading, interpreting, and following instructions, procedures, signs and labels relevant to picking and processing orders
- selecting and using relevant equipment and communications technology when picking and processing orders
- selecting and using required personal protective equipment conforming to industry and work health and safety (WHS)/occupational health and safety (OHS) standards
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

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- documentation and record requirements when picking and processing an order
- equipment used during picking and processing operations and the precautions and procedures to be followed in its use
- housekeeping standards and procedures
- operational work systems, equipment, management and site operating systems for picking and processing orders
- problems that may occur when picking and processing an order and appropriate action that can be taken to resolve these problems
- regulations relevant to picking and processing orders, including relevant bond, quarantine or other legislative requirements
- relevant WHS/OHS and environmental protection procedures and guidelines
- site layout and obstacles
- workplace procedures and policies for picking and processing orders.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations, current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations, current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment include:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals.
-

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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TLIA2013 Receive goods

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to receive goods in accordance with regulatory and workplace requirements as part of work activities undertaken within the transport and logistics industry.

It includes identifying workplace procedures and documentation requirements for receiving goods; checking and inspecting goods on arrival and completing workplace documentation; and unloading, unpacking and storing stock.

Work is performed under some supervision generally within a team environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

A – Handling Cargo/Stock

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Identify workplace procedures and	1.1 Workplace procedures for receiving goods are

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documentation requirements for receiving goods	identified 1.2 Purpose of documents associated with receiving goods is interpreted 1.3 Workplace documentation requirements for receiving goods and reporting damage are identified
2 Check and inspect goods on arrival and complete workplace documentation	2.1 Procedures for checking goods against orders or manifests are identified and followed 2.2 Discrepancies and/or damaged goods are reported 2.3 Non-conforming goods are appropriately documented and despatched or stored in accordance with company procedures
3 Unload, unpack and store stock	3.1 Appropriate manual handling techniques and equipment are identified 3.2 Safe work procedures are used when unloading, unpacking and storing stock 3.3 Advice is sought on appropriate storage locations and requirements for particular products 3.4 Goods are unloaded and unpacked in accordance with workplace procedures 3.5 Assistance is sought from others as required to maintain safe and effective work 3.6 Directions are followed to store stock in appropriate areas

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

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Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLIA2013A Receive goods.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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Assessment Requirements for TLIA2013 Receive goods

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying precautions and required action to minimise, control or eliminate hazards that may exist when receiving goods
- applying relevant legislation and workplace procedures
- communicating and working effectively with others when receiving goods
- completing documentation related to receiving goods
- estimating the size, shape and special requirements of goods and loads
- identifying containers and goods coding, Australian Dangerous Goods (ADG) and International Maritime Dangerous Goods (IMDG) markings and where applicable, emergency information panels
- implementing contingency plans when receiving goods
- modifying activities depending on operational contingencies, risk situations and environments
- operating and adapting to differences in equipment in accordance with standard operating procedures
- reading, interpreting and following instructions, procedures, information, labels and signs relevant to receiving goods
- reporting and/or rectifying identified problems promptly, in accordance with regulatory requirements and workplace procedures
- selecting and using relevant load handling equipment when receiving goods
- selecting and using required personal protective equipment conforming to industry and work health and safety (WHS)/occupational health and safety (OHS) standards
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

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Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- Australian and international codes and regulations relevant to receiving goods including the ADG Code and relevant bond, quarantine or other legislative requirements
- documentation requirements for receiving goods
- focus of operation of work systems, equipment, management and site operating systems for receiving goods
- housekeeping standards and procedures
- problems that may occur when receiving goods and appropriate action that can be taken to resolve these problems
- relevant WHS/OHS and environmental protection procedures and guidelines
- site layout and obstacles
- specifications and standards for checking and inspecting received goods
- workplace procedures and policies for receiving goods.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations, current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations, current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment include:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals.
-

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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TLIA2020 Replenish stock

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to replenish stock in accordance with workplace requirements as part of work activities undertaken within the transport and logistics industry.

It includes applying product knowledge to participate in stock rotation activities, interpreting and filling replenishment requests, and completing all required stock replenishment tasks.

Work is performed under some supervision generally within a team environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

A – Handling Cargo/Stock

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Participate in stock rotation activities	1.1 Stock levels are counted against appropriate documentation
	1.2 Stock levels are recorded and reported
	1.3 Stocks are replenished, adjusted or rotated in accordance with

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	workplace procedures
	1.4 Stock re-ordering processes are activated when appropriate
	1.5 Routine and non-routine problems with products or storage systems are reported in accordance with workplace procedures
2 Interpret and fill replenishment request	2.1 Order request documentation is interpreted
	2.2 Product/s in order are noted and workplace location/s are identified
	2.3 Workplace and product knowledge is used to plan sequence of work
	2.4 Appropriate materials handling equipment is selected in accordance with workplace procedures and timeframes, and work health and safety (WHS)/occupational health and safety (OHS) regulations
	2.5 Required schedules for order movement and despatch or storage are identified
3 Complete stock replenishment	3.1 Products are sorted, assembled and consolidated in the appropriate storage areas
	3.2 Work is checked in accordance with company procedures
	3.3 Documentation and records are completed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

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Unit Mapping Information

This unit replaces and is equivalent to TLIA2020A Replenish stock.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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Assessment Requirements for TLIA2020 Replenish stock

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying relevant legislation and workplace procedures
- communicating and working effectively with others when replenishing stock
- completing documentation related to replenishing stock
- modifying activities depending on operational contingencies, risk situations and environments
- operating and adapting to differences in stock and equipment in accordance with standard operating procedures
- reading, interpreting and following instructions, procedures and labels relevant to replenishing stock
- reporting and/or rectifying identified problems promptly, in accordance with regulatory requirements and workplace procedures
- selecting and using relevant communications, computing and office equipment when replenishing stock
- selecting and using required personal protective equipment conforming to industry and work health and safety (WHS)/occupational health and safety (OHS) standards
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- Australian codes and regulations relevant to replenishing stock
- computer records and documentation requirements for replenishing stock
- focus of operation of work systems, equipment, management and site operating systems for replenishing stock
- housekeeping standards and procedures

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- principles of operation and functions of stock control systems
- relevant WHS/OHS and environmental protection procedures and guidelines
- site layout and obstacles
- workplace procedures and policies for replenishing stock.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations, current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations, current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment include:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals.
-

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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TLIA3039 Receive and store stock

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to receive and store stock for a workplace store in an enterprise/organisation in a transport, logistics, production, hospitality, retail or other relevant industry sector, in compliance with relevant codes of practice, regulations and workplace procedures.

Work must be carried out for receiving and storing stock in a workplace store. It specifically covers taking delivery of stock, storing, rotating and maintaining stock received, and completing documentation.

Work is performed under general supervision, with some accountability and responsibility for self and others in achieving the prescribed outcomes.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

A – Handling Cargo/Stock

Unit Sector

Not applicable.

Elements and Performance Criteria

Elements describe the Performance criteria describe the performance needed to

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essential outcomes.	demonstrate achievement of the element.
1 Take delivery of stock	1.1 Incoming stock is accurately checked against orders and delivery documentation in accordance with workplace procedures
	1.2 Variations are accurately identified, recorded and communicated to appropriate person
	1.3 Items are inspected for damage, quality, use-by dates, breakages and discrepancies, and records are made in accordance with workplace policy
2 Store stock	2.1 Hazards are identified, risks are assessed and control measures are implemented
	2.2 Stock is promptly and safely transported to appropriate storage area without damage
	2.3 Stock is stored in appropriate location within area and in accordance with workplace security procedures
	2.4 Appropriate personal protective equipment is correctly used during receival and storage operations
	2.5 Stock levels are accurately recorded in accordance with workplace procedures
	2.6 Stock is labelled in accordance with workplace procedures
3 Rotate and maintain stock	3.1 Stock is rotated as required in accordance with workplace policy
	3.2 Stock is moved using appropriate equipment in accordance with work health and safety (WHS)/occupational health and safety (OHS) requirements, relevant regulations and workplace procedures
	3.3 Quality of stock is checked and reported
	3.4 Appropriate action is taken where stock quality is identified as outside specified standards
	3.5 Stock is placed in storage or disposed of in accordance with workplace policy

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4 Complete documentation	4.1 Required documentation procedures and processes are confirmed
	4.2 Records and documentation are completed legibly and proofread
	4.3 Records and documentation are processed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLIA3039A Receive and store stock.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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Assessment Requirements for TLIA3039 Receive and store stock

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying relevant legislation and workplace procedures
- communicating and working effectively with others
- monitoring work activities in terms of planned schedule
- operating and adapting to differences in equipment in accordance with standard operating procedures
- reading and interpreting relevant instructions, procedures and labels
- selecting and using relevant communications and computing equipment
- selecting and using required personal protective equipment conforming to industry and work health and safety (WHS)/occupational health and safety (OHS) standards
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- contacts and sources of information and documentation needed when receiving and storing stock
- customer service policies and procedures
- interpretation of workplace specifications and orders for supplies
- principles of stock control
- problems that may occur when receiving and storing stock and appropriate action that can be taken to resolve these problems
- procedures for operating electronic communications equipment
- protocols and procedures for liaising with supplier representatives, drivers and colleagues using appropriate technology

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- purpose and procedures for using relevant personal protective equipment
- relevant codes of practice and legislative requirements (for example dangerous goods regulations, health and hygiene regulations)
- relevant WHS/OHS and environmental procedures and regulations
- safe lifting and handling procedures
- site layout
- stock control documentation and systems used in workplace stores
- stock security systems
- systems for completing relevant records and documentation.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment include:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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TLIA4005 Check and evaluate records and documentation

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package:

- Minor statement changes in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to check and evaluate records and documentation in accordance with regulatory and workplace requirements, as part of work activities within the transport and logistics industry.

It includes checking documentation, and analysing and evaluating records.

Work is performed under some supervision generally within a team environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

A – Handling Cargo/Stock

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Check documentation	**1.1** Documentation, regulatory and workplace requirements are confirmed

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	1.2	Documentation is checked to ensure compliance with regulatory and workplace requirements
	1.2	Documentation is checked regularly and personnel responsible for documentation are advised of deadlines
	1.3	Appropriate systems are used to ensure maintenance of records complies with regulatory and workplace requirements
2 Analyse and evaluate records	**2.1**	Records are analysed to identify unexpected deviations from plans or possible future problems with plant and/or equipment
	2.2	Advice is provided to appropriate personnel when problems are identified
	2.3	Security of records and documentation is maintained at all times and access is granted to authorised personnel in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Unit Mapping Information

This unit replaces and is equivalent to TLIA4005A Check and evaluate records and documentation.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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Assessment Requirements for TLIA4005 Check and evaluate records and documentation

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package:

- Minor statement changes in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying relevant legislation and workplace procedures
- communicating effectively with others when checking and evaluating transport documentation
- identifying cargo, container and goods, coding, Australian Dangerous Goods (ADG) and International Maritime Dangerous Goods (IMDG) markings, and emergency information panels
- identifying, selecting and using relevant equipment, processes and procedures when checking and evaluating documentation for local and/or international transport of cargo and containers
- modifying activities depending on operational contingencies, risk situations and environments
- monitoring work activities in terms of planned schedule
- reading and interpreting relevant instructions, procedures and labels
- receiving, acknowledging and sending messages with available communications equipment
- reporting and/or rectifying identified problems, faults or malfunctions in accordance with regulatory requirements and workplace procedures
- working collaboratively with others when checking and evaluating transport documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- Australian and international standards, codes and regulations relevant to local and international cargo/container transport documentation requirements, including the ADG and IMDG Codes
- cargo marking and numbering systems
- operational work systems, equipment, management and site operating systems for checking

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and evaluating cargo/container transport documentation
- problems that may occur when checking and evaluating documentation, and appropriate action that can be taken to resolve these problems
- relevant bond, quarantine or other legislative requirements
- site layout, loading/unloading plans and sequence sheets
- types of cargo, containers and transport modes and their documentation requirements
- workplace procedures and policies for checking and evaluating documentation for local and/or international transport of cargo and containers.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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TLIA5058 Manage facility and inventory requirements

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

his unit involves the skills and knowledge required to manage a facility and its inventory requirements, in various contexts within the transport and logistics industry.

It includes identifying space, safety and security requirements; developing a documentation system; designing storage zones and evaluating facility utilisation.

This unit generally applies to those who provide leadership of others individually or in teams.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

A – Handling Cargo/Stock

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Identify space requirements	1.1 Organisational medium-term and long-term storage needs are assessed to facilitate planning, in accordance with the enterprise business plan and legislative requirements

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	1.2 Product type, picking frequencies, value, fragility, weight, handling characteristics, quantity and holding periods are assessed to consider type and amount of storage
	1.3 Facility is assessed to determine stock holding and handling requirements for each inventory item
	1.4 Volume requirements are calculated to ensure ongoing stock holding needs are met
	1.5 Total space requirement is calculated and used to formulate a space utilisation plan
2 Identify safety and security requirements	2.1 Assessment is made of risks to ensure maximum safety and security for personnel, stock and facilities
	2.2 Storage handling security and incident/emergency procedures for each class or type of product are identified and documented
	2.3 Fire prevention and firefighting systems are identified in accordance with building code regulations and storage material requirements
	2.4 Evacuation plan is developed in accordance with the enterprise safety program
3 Develop and implement documentation system	3.1 System for recording and tracing stock location, receival, throughput and despatch is developed and implemented to enable reporting, quality assurance and financial requirements to be met
	3.2 System for recording communication with carriers, customers and employees is developed and implemented to assess operational effectiveness and to provide data for system improvement
4 Design storage zones	4.1 Space requirements and equipment operation are accurately assessed to facilitate warehouse zone planning
	4.2 Assessment is made of the facility to enable the most effective use of available space
	4.3 Positioning of storage areas, bays, work stations and the like is undertaken in accordance with planning process data
	4.4 Provision for maintenance and cleaning is catered for
5 Evaluate facility	5.1 Continual system of review is used involving regular checks to ensure storage areas and systems are functioning at

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utilisation	optimum levels
	5.2 Receiving and despatching systems are assessed to ensure they provide efficient operations
	5.3 Storage and handling systems are assessed to ensure they provide ease of access and comply with ergonomic principles
	5.4 Product handling and storage process are assessed to ensure minimisation of product damage, contamination and stock losses
	5.5 Flexibility of facility layout to meet changing storage and handling requirements is maintained
	5.6 Appropriate reporting systems are established and used to capture and maintain data to design improved facilities and systems

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLIA5058A Manage facility and inventory requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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Assessment Requirements for TLIA5058 Manage facility and inventory requirements

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying precautions and required action to minimise, control or eliminate hazards that may exist during work activities
- applying relevant legislation and workplace procedures
- communicating and working effectively with others when managing facility and inventory requirements
- developing and implementing contingency plans
- prioritising work and coordinating the work of others
- providing leadership to others when managing facilities and inventory requirements
- reading and interpreting plans, diagrams, regulations, codes of practice and other documentation relevant to managing facilities and inventory requirements
- reporting and/or rectifying identified problems promptly
- selecting and applying appropriate technology, information systems and procedures when managing facility and inventory requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- emergency procedures
- enterprise business policies and plans including procedures for facility operations
- operational warehouse systems, resources, management and workplace operating systems
- principles, purpose and location of controls, monitoring devices and systems
- procedures for managing and controlling hazardous situations when carrying out work activities, particularly those that relate to storing materials

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- procedures for operating electronic communications equipment
- relevant sections of national and state/territory regulatory requirements and codes of practice, including applicable facility fire safety and building regulations
- requirements for completing relevant documentation
- selection and appropriate application of technology, information systems and procedures
- throughput and storage requirements for specific types of inventory.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations, current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations, current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment include:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals.
-

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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TLID1001 Shift materials safely using manual handling methods

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to shift loads safely using manual handling methods. Work must be carried out in compliance with the relevant work health and safety (WHS)/occupational health and safety (OHS) regulations concerning the manual handling and movement of loads.

It includes assessing the risks associated with relocating the load, planning the relocation process and carrying out the relocation in accordance with the plan.

Work is performed under some supervision generally within a team environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

D – Load Handling

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Assess risks associated with	1.1 Products, goods or materials to be relocated are identified and assessed to determine appropriate relocation method

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relocating load	1.2	Storage locations are determined and potential routes to be followed are identified
	1.3	Effect of load relocation on original load base is predicted
	1.4	Points of balance are estimated
	1.5	Required clearances are compared to available space and adjustments are made to moving loads to reflect required clearance
	1.6	Effects of moving contents, which may be loose, liquid, dangerous or hazardous, are considered
	1.7	Risks in potential routes are considered
	1.8	Risks to self are identified arising from the required lifting, load carrying, set down or movement of the goods
	1.9	Manual handling procedures for lifting, lowering and carrying, pushing and pulling are identified
	1.10	Team lifting processes are considered when moving loads
	1.11	Appropriate personal protective equipment is determined
	1.12	Size to weight ratio of items to be manually handled are identified
2 Plan load relocation	2.1	Relocation of the load is planned, consistent with the code of practice for manual handling and in accordance with the risk assessment
	2.2	Process for relocating load is proposed including predicting and planning for potential difficulties
	2.3	Proposed process is checked for compliance with code of practice and workplace procedures
3 Relocate load	3.1	Actions for lifting, lowering and carrying, pulling and pushing a load are in accordance with workplace procedures and WHS/OHS requirements
	3.2	Applications appropriate for team relocation of load are identified
	3.3	Team lifting tasks are coordinated
	3.4	Planned process and route are followed

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3.5 Relocated materials are set down without damage to goods, personnel or equipment and are checked for stability

3.6 Relocation is checked to see it meets work requirements and variance/s are reported

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLID1001A Shift materials safely using manual handling methods.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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Assessment Requirements for TLID1001 Shift materials safely using manual handling methods

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying precautions and required action to minimise, control or eliminate risks that may exist when manually lifting and handling materials and goods
- applying relevant legislation and workplace procedures
- communicating effectively with others when manually lifting and handling materials and goods
- implementing contingency plans when manually lifting and handling, materials and goods
- interpreting and following operational instructions and prioritising work
- interpreting manual handling risks
- modifying activities depending on operational contingencies, risk situations and environments
- operating and adapting to differences in loads and materials in accordance with standard operating procedures
- reading and interpreting instructions, procedures and information relevant to the manual lifting and handling of materials and goods
- selecting and using required personal protective equipment conforming to industry and work health and safety (WHS)/occupational health and safety (OHS) standards
- using correct manual handling practices
- working collaboratively with others when manually lifting and handling materials and goods
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

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Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- housekeeping standards and procedures
- relevant WHS/OHS procedures and guidelines concerning the manual lifting and movement of loads
- risks when manually lifting and handling materials and goods, and related precautions to control the risk, including:
- controlled actions on a movement during lifting
- distance over which load is to be shifted
- frequency of shifting operations
- load on the spine during lifting
- postures and positions during lifting
- rotation and side movement of the spine during lifting
- time allowed for shifting the load
- type, weight and position of the load
- work layout
- site layout and obstacles
- workplace procedures and policies for manual handling.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations, current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations, current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, regulations, codes of practice

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and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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TLID2004 Load and unload goods/cargo

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to load and unload goods and cargo in accordance with relevant state/territory roads and traffic authority regulations/permit requirements.

It includes loading and unloading goods and cargo, securing and protecting a load and completing all required documentation.

Work is performed under general supervision within a team environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

D – Load Handling

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

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1	**Load and unload goods/cargo**	1.1 Load characteristics are identified and taken into account when determining appropriate loading and unloading workplace procedures
		1.2 Job hazards are identified and required action is taken to minimise, control or eliminate identified hazards
		1.3 Dangerous or hazardous goods are identified and handled in accordance with the current Australian Dangerous Goods (ADG) Code and other relevant regulations/permit requirements
		1.4 Load is packed/unpacked to make safe and effective use of available spaces
		1.5 Goods/cargo are loaded in accordance with relevant mass and loading regulations and workplace procedures
		1.6 Lifting aids and appliances are selected and used to aid loading procedures in accordance with workplace procedures and safety legislation
		1.7 Unloading activities are conducted in a safe and efficient manner taking into account suitable locations, stowage, safe use of equipment and balance of remaining load
		1.8 Goods requiring special handling and/or documentation are identified and workplace procedures are followed
		1.9 Relocated material is restacked appropriate for transport method, safe height, weight loading, size and crushability of goods
2	**Secure and protect load**	2.1 Load distribution is checked to ensure it is even, legal and within safe working capacity
		2.2 Load is checked to ensure dangerous goods and hazardous substances are appropriately segregated in accordance with current ADG Code
		2.3 Load is secured using correct load restraint and protection equipment for different loads, carrying and storage conditions
		2.4 Load is protected in accordance with legal and workplace safety requirements
3	**Complete**	3.1 Load is inspected and checked for security to travel, in accordance with relevant regulations/permit requirements

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documentation		and current ADG Code, as required
	3.2	All required goods documentation is completed in accordance with workplace requirements including current ADG Code, as required

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLID2004A Load and unload goods/cargo.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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Assessment Requirements for TLID2004 Load and unload goods/cargo

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying required action to minimise, control or eliminate identified hazards
- completing relevant documentation
- estimating load size, shape and special requirements and taking appropriate action
- identifying containers and goods coding, Australian Dangerous Goods (ADG) and International Maritime Dangerous Goods (IMDG) Code markings and emergency information panels, and taking appropriate action
- implementing contingency plans
- interpreting and following operational instructions and prioritising work
- modifying activities depending on operational contingencies, risk situations and environments
- monitoring work activities in terms of planned schedule
- operating and adapting to differences in cargo and equipment in accordance with operating procedures
- reporting and/or rectifying identified problems promptly, in accordance with regulatory requirements and workplace procedures
- reading and interpreting relevant instructions, procedures, information, signs and labels
- applying relevant legislation and workplace procedures
- selecting and using required personal protective equipment conforming to industry and work health safety (WHS)/occupational health and safety (OHS) standards
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

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Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- chain of responsibility workplace procedures
- housekeeping workplace procedures
- national load restraint guidelines
- problems that may arise when loading and unloading goods and cargo and actions that should be taken to prevent or solve these problems
- relevant Australian and international regulations and codes of practice for handling and transporting dangerous goods and hazardous substances
- relevant Australian Standards and regulations including state/territory mass and loading regulations
- risks when loading and unloading goods/cargo and related precautions to control risk
- safe work methods for securing load
- security awareness requirements when loading and unloading vehicles and in particular recognising, isolating and reporting suspicious cargo and goods
- site layout and obstacles
- WHS/OHS procedures and guidelines concerning the lifting and movement of loads
- workplace procedures and policies for loading and unloading goods/cargo.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment include:

- a range of relevant exercises, case studies and/or simulations
- applicable documentation including workplace procedures, regulations, national Load Restraint Guide (LRG), codes of practice and operation manuals
- relevant materials, tools, equipment and personal protective equipment currently used in

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industry.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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TLID2013 Move materials mechanically using automated equipment

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to move materials mechanically using automated equipment such as automatic guided vehicles, tow motors, low level order pickers, conveyor systems and mechanised pallet movers.

It includes selecting appropriate mechanical moving equipment, moving materials/goods in accordance with operational requirements, checking condition of materials/goods and completing all required documentation.

Work must be carried out in compliance with relevant work health and safety (WHS)/occupational health and safety (OHS) regulations concerning moving materials mechanically using automated equipment.

Work is performed under limited or minimum supervision.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

D – Load Handling

Unit Sector

Not applicable.

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Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Select load moving equipment	1.1 Mechanised handling equipment, route to be taken and procedures to be used are selected appropriate to goods characteristics
	1.2 Dangerous goods and hazardous materials are identified and handled in accordance with codes of practice, WHS/OHS requirements and workplace procedures
2 Move goods	2.1 Hazards are identified, risks are assessed and control measures are implemented
	2.2 Goods are moved using selected materials handling equipment in accordance with WHS/OHS regulations, manufacturer instructions and workplace procedures
	2.3 Problems moving goods and materials using automated equipment are identified and reported in accordance with workplace procedures
3 Check goods and complete documentation	3.1 Relocated goods are inspected for possible damage during transit/movement and appropriate action is taken
	3.2 Appropriate documentation is completed to track moved goods in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

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Unit Mapping Information

This unit replaces and is equivalent to TLID2013A Move materials mechanically using automated equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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Assessment Requirements for TLID2013 Move materials mechanically using automated equipment

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria on at least one occasion and include:

- applying precautions and required action to minimise, control or eliminate identified hazards
- applying relevant legislation and workplace procedures
- checking and replenishing fluids and carrying out lubrication processes during work activities
- communicating effectively with others
- ensuring servicing of automated equipment in terms of maintenance schedule and standard operating procedures
- implementing contingency plans
- monitoring and prioritising work activities in terms of planned schedule
- monitoring performance of automated equipment and taking appropriate action as required
- operating and adapting to differences in equipment in accordance with operating procedures
- operating electronic communications equipment to required protocol
- reading, interpreting and following relevant instructions, procedures, information and signs
- reporting and/or rectifying identified problems, faults or malfunctions promptly, in accordance with regulatory requirements and workplace procedures
- selecting and using required personal protective equipment conforming to industry and work health and safety (WHS)/occupational health and safety (OHS) standards
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and include knowledge of:

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- housekeeping standards and procedures
- operational work systems, equipment, management and site operating systems for using automated equipment to move materials mechanically
- problems that may occur and appropriate action that can be taken to resolve these problems
- purpose, characteristics, capabilities, requirements and limitations of automated materials moving equipment
- relevant regulations, workplace procedures and policies for using automated equipment to move materials mechanically
- relevant WHS/OHS and environmental protection procedures and guidelines
- risks when using automated equipment to move materials and related precautions to control the risks
- site layout and obstacles.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment include:

- a range of relevant exercises, case studies and/or simulations
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
- automated equipment such as:
  - automatic guided vehicles
  - tow motors
  - low level order pickers
  - conveyor systems
  - mechanised pallet movers
- relevant materials, tools, equipment and personal protective equipment currently used in industry.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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TLID3011 Conduct specialised forklift operations

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to operate a forklift with specialised attachments or all-terrain equipment, in accordance with relevant state/territory high risk work licence requirements and regulations, in a variety of operational contexts.

It includes checking attachments and worksite for suitability, selecting type of forklift and accessories for required workplace task, shifting load and completing work in accordance with operational requirements.

Specialised operation of a forklift is performed under some supervision, generally within a team environment. It involves the application of equipment operation principles and procedures to maintain the safety and specialised operation of a forklift

A person who operates a forklift must hold a high risk work licence.

Pre-requisite Unit

Not applicable.

Competency Field

D – Load Handling

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS **PERFORMANCE CRITERIA**

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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.
1	**Check attachments and worksite for suitability**	1.1 Suitable work area is selected for operations
		1.2 Job hazards are identified and required action is taken to minimise, control or eliminate identified hazards
		1.3 Work area is checked for overhead obstructions and proximity to service delivery lines
		1.4 Barriers or warning signs are erected in areas subject to passing traffic
		1.5 Attachments and platforms are securely fixed to carriage or tines
		1.6 Personnel support platforms are inspected to ensure accordance with relevant Australian Standard/s
2	**Select type of forklift and accessories for required workplace task**	2.1 Special equipment, accessories or attachments are identified to match load characteristics and work requirements
		2.2 Appropriate specialised equipment is selected
		2.3 Existing attachments are removed and stored in accordance with workplace procedures
		2.4 Specialised equipment is fitted in accordance with manufacturer instructions and workplace procedures
		2.5 Designated staff are notified about specialist operations
3	**Shift load and complete work**	3.1 Equipment is operated within safe working limits and to maximise efficiency of operations
		3.2 Load is lifted, carried and set down in accordance with workplace and manufacturer procedures, and regulatory requirements
		3.3 Documentation is completed damage or faults to goods or equipment are reported to appropriate personnel
		3.4 Specialist equipment and forklift are returned to appropriate storage/parking area

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Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLID3011A Conduct specialised forklift operations.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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Assessment Requirements for TLID3011 Conduct specialised forklift operations

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying precautions and required action to minimise, control or eliminate identified hazards
- checking and replenishing fluids and carrying out lubrication processes during work activities
- checking forklift compliance plate for safe weight limits
- communicating effectively with others
- completing relevant documentation
- identifying points of balance and safe lifting positions on a range of loads when operating a forklift (including accessories)
- implementing contingency plans
- interpreting and following operational instructions and prioritising work
- modifying activities depending on operational contingencies, risk situations and environments
- monitoring equipment performance
- monitoring work activities in terms of planned schedule
- operating and adapting to differences in equipment in accordance with operating procedures
- reading and interpreting relevant instructions, procedures, information and signs
- reporting and/or rectifying identified problems, faults or malfunctions promptly, in accordance with regulatory requirements and workplace procedures
- selecting and using required personal protective equipment conforming to industry and work health safety (WHS)/occupational health and safety (OHS) standards
- servicing equipment in terms of maintenance schedule and operating procedures
- working collaboratively with others
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

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Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- efficient driving techniques
- engine power management and safe operating strategies
- forklift controls, instruments and indicators, and their use
- handling procedures for forklifts involved in specialised operations
- high risk work licence workplace requirements
- operating hazards, and related defensive driving and hazard control techniques
- pre-operational checks carried out on forklift and accessories, and related action
- procedures to be followed in an operational emergency
- relevant duty of care requirements for specialised operation of a forklift
- relevant WHS/OHS and environmental procedures and regulations
- safe weight limits
- site layout and obstacles
- types of forklift accessories and ancillary equipment, their purposes and procedures for their use
- workplace operating procedures.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment include:

- a range of relevant exercises, case studies and/or simulations
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
- relevant materials, tools, equipment and personal protective equipment currently used in industry.

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TLIL4005 Apply conflict/grievance resolution strategies

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to apply conflict or grievance resolution strategies to resolve issues that may occur in the course of work.

It includes identifying potential conflict situations, implementing appropriate conflict resolution strategies and using effective interpersonal skills.

Work is performed under minimum supervision with general guidance on progress and outcomes. Work involves discretion and judgement for self and others when managing and resolving conflict or grievances internal and external to the workplace.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

L – Resource Management

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Identify potential conflict situations	1.1 Signs and stages of conflict or grievance are recognised
	1.2 Possible causes of conflict or grievance are identified

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2 Implement conflict resolution strategies	2.1 Factors and issues relevant to conflict or grievance are clarified
	2.2 Strategies for dealing with conflict or grievance are developed
	2.3 Options for resolving the conflict or grievance are presented that enable constructive responses to be negotiated and established relationships to continue
	2.4 Strategies are implemented to resolve the source of conflict
	2.5 Outcomes of the process are monitored to ensure objectives continue to be met
3 Use effective interpersonal skills	3.1 Effective verbal and non-verbal communication is used during negotiations, including body language, questioning, language style, active listening and reflection
	3.2 Feedback is given assertively and received non-defensively during negotiations
	3.3 Shared understanding is created through written communications

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLIL4005A Apply conflict/grievance resolution strategies.

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Assessment Requirements for TLIL4005 Apply conflict/grievance resolution strategies

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying interpersonal skills
- applying relevant legislation and workplace procedures
- communicating effectively with others when applying conflict and grievance resolution strategies
- completing relevant documentation
- gathering, recording and conveying simple and routine work-related information
- identifying existing and potential conflict or grievances
- interpreting and following operational instructions and prioritising work
- negotiating effectively with others when applying conflict and grievance resolution strategies
- participating in small informal work groups
- reading and interpreting relevant instructions, procedures, information and signs
- responding appropriately to cultural preferences in the workplace, including modes of behaviour and interactions with others
- selecting and appropriately applying technology, information systems and procedures to complete workplace tasks
- working collaboratively with others when applying conflict and grievance resolution strategies
- working systematically with required attention to detail.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

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- options for constructive responses to typical conflict/grievance situations
- relevant regulation and code requirements
- relevant work health and safety (WHS)/occupational health and safety (OHS) policies and procedures
- relevant workplace business marketing policies and practices, including requirements for maintaining security and confidentiality
- signs, stages and possible causes of conflict in the workplace
- typical problems that can occur when applying conflict or grievance resolution strategies and related appropriate action that can be taken
- workplace protocols and procedures for identifying and resolving conflict or grievances.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment include:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals.
-

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Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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TLILIC0003 Licence to operate a forklift truck

Modification History

Release 1. This is a release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit specifies the skills and knowledge required to operate a forklift truck safely in accordance with all relevant legislative requirements. Competence in this unit, does not in itself result in a HRWL licence to operate this plant.

Forklift truck means a powered industrial truck equipped with lifting media made up of a mast and an elevating load carriage to which is attached a pair of fork arms or other attachments that can be raised 900 mm or more above the ground, but does not include a pedestrian-operated truck or a pallet truck.

A person performing this work is required to hold a forklift truck High Risk Work Licence (HRWL).

This unit requires a person operating a forklift truck to:

- plan for the work/task
- prepare for the work/task
- perform work/task
- pack up

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit of competency.

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) Regulations and meets Commonwealth, State and Territory HRWL requirements.

The National Assessment Instrument (NAI) is the mandated assessment for the HRWL to operate the relevant licencing class as detailed in this unit.

Pre-requisite Unit

Not applicable

Competency Field

LIC - Licencing Units

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Unit Sector

Not applicable

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Plan work/task	**1.1** Task requirements are identified from work orders or equivalent and confirmed with relevant people and site inspection is conducted in accordance with workplace procedures
	1.2 Work area operating surface is assessed to determine suitability for operational use of forklift truck in accordance with workplace procedures
	1.3 Suitability of forklift truck and attachment working load limit (WLL) is determined for the load/s and work/task requirements in accordance with manufacturer requirements and workplace procedures
	1.4 Working area is inspected and appropriate paths for operating the forklift truck and moving and placing load/s in work area are assessed and managed in accordance with workplace procedures
	1.5 Hazard and risk control measures are identified and reported to relevant person/s in accordance with workplace procedures
	1.6 Traffic management plan implementation is confirmed in accordance with workplace procedures
	1.7 Appropriate communication procedures are identified with relevant people in accordance with workplace procedures
	1.8 All work is confirmed to ensure coverage of work/task requirements for the relevant work area is in accordance with workplace procedures

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2 Prepare for work/task	**2.1**	Consultation with workplace person/s is maintained to ensure workplan is clear and consistent with site requirements in accordance with safe work procedures
	2.2	Weather and work environmental conditions are assessed to determine any impact on forklift truck operations in accordance with manufacturer requirements and safe work procedures
	2.3	Risk control measures for hazards identified are checked for implementation in accordance with safe work procedures
	2.4	Forklift truck is accessed in a safe manner in accordance with manufacturer requirements and workplace procedures
	2.5	Forklift truck logbook is checked in accordance with manufacturer, regulatory requirements and safe work procedures
	2.6	Pre-start checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with safe work procedures and manufacturer requirements
	2.7	Forklift truck is set up correctly with any relevant attachments as per work plan in accordance with relevant manufacturer requirements including data plate and safe work procedures
	2.8	Operational checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with manufacturer requirements and safe work procedures
	2.9	Hazard and risk control measures are checked for implementation and communicated to people in the work area in accordance with safe work procedures
3 Perform work/task	**3.1**	Weight and positioning of load is assessed to ensure compliance with forklift truck data plate requirements and in accordance with safe work procedures

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	3.2	Forklift truck is operated safely in accordance with manufacturer requirements and safe work procedures
	3.3	Loads are monitored constantly when lifting, moving, lowering and placing to ensure stability of load and avoidance of hazards in accordance with safe work procedures
	3.4	Unplanned and unsafe situations are responded to in accordance with safe work procedures
	3.5	Loads are picked up, transported and placed using all forklift truck movements in accordance with safe work procedures
	3.6	Forklift truck is parked, switched off and isolated appropriately in accordance with manufacturer requirements and safe work procedures
4 Pack Up	**4.1**	Forklift truck shutdown procedures are carried out in accordance with manufacturer requirements and safe work procedures
	4.2	Forklift truck is secured to prevent unauthorised access/use in accordance with safe work procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLILIC2001 Licence to operate a forklift truck

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Assessment Requirements for TLILIC0003 Licence to operate a forklift truck

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- applying safe operating procedures for a forklift truck including:
  - maintaining safe operating speed
  - travelling with load lowered to an appropriate height for the terrain, operating surface and visibility in relation to direction of travel
- applying relevant forklift truck manufacturer requirements and data plate information and approved modifications to attachments fitted are in accordance with manufacturer requirements
- carrying out pre-start checks, including visual inspection which must include:
  - battery charge as required by manufacturer requirements
  - checking and interpreting data plate/s are relevant to the attachment and the forklift truck
  - checking for signs of paint separation and stressed welds indicating potential structural weakness
  - document evidence of damage
  - engine / mechanical fluid level checks including fuel as required by manufacturer requirements
  - ensuring availability of correct forklift truck logbook and updating records as required
  - ensuring forklift truck tynes or other attachment/s are securely fitted
  - ensuring seat and mirrors are adjusted appropriately and seat belt is functional
  - fluid leaks
  - lights are working effectively
  - safety equipment checks
  - signage and labels to ensure they are visible and legible
  - wheels and tyres for damage/correct inflation if applicable
- conducting and applying risk and hazard assessment strategies including:
  - insufficient lighting
  - other specific hazards including dangerous goods
  - overhead hazards and fixed structures, roof beams and doorways
  - restricted and poorly ventilated areas

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  - surface suitability based on forklift truck and task requirements
  - the risk of collision with people, moving plant and fixed structures
  - weather conditions
- complying with Commonwealth, State and Territory Work Health and Safety (WHS)/Occupational Health and Safety (OHS)/Occupational Safety and Health (OSH) legislation, regulations safe work and workplace procedures
- conducting operational checks, which must ensure:
  - all controls are located, identified and tested for functionality
  - all hydraulic functions operated to maximum extension and ensuring attachment (if fitted) movements and control functions are smooth and comply with operating requirements
  - hazard warning systems (e.g. reversing beepers, lights and horns) are functional
  - recording and maintaining accurate information relating to forklift truck operations
  - safety devices as fitted
  - start-up is in accordance with manufacturer requirements
  - steering, transmission and brake functions comply with operating requirements
  - there are no unusual noises
- confirming and following traffic management plan procedures relevant to their role in the work area
- conducting relevant procedures for refuelling and isolating fuel/power source as per manufacturer requirements using appropriate PPE
- determining relevant lifting attachment to perform work/task
- determining lift requirements including:
  - positioning of unusually balanced/shaped loads
  - centre of gravity
  - dynamic nature of load
  - tyne/attachment positioning
  - weight
- ensuring risk control measures within the work area are effective as per workplace procedures
- identifying, isolating and tagging out defective equipment and reporting to authorised person/s
- interpreting and confirming relevant documentation, workplace instructions, safety information, emergency procedures for the work task and relevant area
- interpreting workplace procedures in relation to various environmental conditions
- maintaining communication with other workplace personnel through using worksite procedures including:
  - audible and visual warning devices
  - signage
  - two-way radio
  - verbal instructions
  - written instructions
- maintaining three points of contact whilst accessing and egressing forklift truck and ensuring

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rungs / steps are free of hazards
- operating and monitoring safe forklift truck operations using minimum 250kg dynamic and non-dynamic loads that include:
  - aligning tynes/attachment to load
  - carrying out a lift to 75% of the maximum height
  - conducting trial lift to ensure forklift truck and load are stable, and load is safe to move
  - correctly using horns and mirrors in workplace
  - correctly positioning and using an observer to assist when operating with a load that may restrict vision or be placed out of vision of the operator
  - driving applicable to conditions and moving loads safely
  - driving a forklift truck safely with load in forward and reverse, while maintaining visibility through an obstacle course including:
    - an 'S' bend with a minimum 90 degrees left and right turn
    - ensuring load/s remains stable through pick up, transport and placement
    - forklift truck speed is appropriate to load and surroundings
    - lowering dynamic and non-dynamic loads to appropriate height for travel in forward and reverse
  - picking up, driving, manoeuvring and placing dynamic and non-dynamic loads safely at various heights within a compliant racking system
  - picking up, driving, manoeuvring and placing dynamic and non-dynamic loads safely into/onto an elevated, flat, stable area
  - tilting mast (or forks if applicable) to ensure balance of load
  - using gluts/dunnage appropriately and lowering load safely
  - using tilt and side shift (where fitted) safely to manoeuvre dynamic and non-dynamic loads into allocated space
- reporting to relevant person/s on site risk control measures that are not in place or are deficient
- setting up an exclusion zone
- securely parking forklift truck and isolating in appropriate position including:
  - minimising possible access by unauthorised person/s
  - tynes/attachment lowered to required position in accordance with manufacturer requirements
  - park brake applied
  - switching off, isolating fuel/power source and removing key according to workplace procedures
- shutting down a forklift truck in accordance with manufacturer requirements and workplace procedures

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

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- Australian and industry standards, codes of practice and guidelines to safely operate a forklift truck
- communication procedures including:
  - audible and visual warning devices
  - hand signals
  - questioning techniques
  - signage
  - traffic warning systems
  - two-way radio
  - written instructions
- forklift truck characteristics and capabilities, manufacturer requirements and instructions for any attachments
- impact of the following on the operation of the forklift truck including:
  - failure/loss of control including brakes and steering
  - failure of equipment during forklift truck operations
  - forklift truck instability causes including:
    - deterioration of ground condition
    - overloading
    - pick up and placement of load
    - irregular loads
  - operating on ramps and uneven surfaces and in restricted spaces
  - use of forklift truck data plate and attachment data plate and appropriate methodology to determine weight of a load is appropriate for forklift truck and any attachment if fitted including the estimation or determination from:
    - labels on the actual load
    - markings on the actual load
    - paperwork such as consignment notes, running sheets and weighbridge dockets
    - weighing a carton and calculating load
- manufacturer requirements, instructions and operator's manual
- problems, and appropriate response procedures to unplanned and/or unsafe environmental conditions including:
  - wind
  - lightning
  - water/ice impacted surface/ground
  - rain
  - extreme heat
  - Ultra violet (UV) exposure
- problems and equipment faults, and implementing appropriate response procedures to unplanned and/or unsafe situations including:
  - lock out and tag out procedures
- relevant procedures for refuelling and recharging forklift truck using appropriate PPE

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including:

- gas bottle
- connecting battery to charger and disconnecting battery from charger and reconnecting to forklift truck
- refuelling

- procedures for recording, reporting and maintaining workplace records and information
- risk assessment process including hierarchy of control:
  - elimination
  - substitution
  - isolation
  - engineering controls
  - administrative controls
  - personal protective equipment (PPE)
- safe use and compliance of different types of attachments including:
  - bale clamps
  - carpet spike for carpet rolls
  - drum carrier
  - jib attachment
  - paper roll clamps
  - personnel work platforms
  - rotators
  - slippers/fork extensions on tynes
- suitability and lifting capability of the attachment to be used
- shut down procedures for a forklift truck in accordance with manufacturer requirements
- traffic management plan procedures and requirements
- typical routine problems encountered operating a forklift truck and associated equipment, and adjustments required for correction
- workplace procedures including work plan which may be verbal, documented/written, or electronically generated
- work area operating surface suitability including issues with:
  - backfilled ground
  - bitumen (damaged, cracked)
  - concrete (damaged, cracked)
  - hard compacted soil
  - potholes
  - railway tracks
  - rough uneven or difficult terrain including sloping surfaces, uneven surfaces, steel decks and grates
  - soft soils
  - trench covers
- Work Health and Safety (WHS)/Occupational Health and Safety (OHS)/Occupational Safety

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and Health (OSH) requirements, safe work and workplace procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

- Simulators must not be used in the assessment of this unit of competency.

Resources for assessment must include access to:

- a suitable forklift truck that complies with AS 2359 Powered industrial trucks and is in a safe/serviceable condition in accordance with manufacturer requirements
- associated equipment for forklift truck operations
- suitable dynamic and non-dynamic loads
- suitable compliant racking system
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including:
  - approved codes of practice and relevant guidance material
  - relevant Australian technical standards
  - manufacturer guidelines (instructions, requirements or checklists), relevant industry standards and operating procedures (where applicable)

Links

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TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package:

- Minor statement changes in unit Application
- Minor changes and re-ordering of Performance Evidence
- Minor re-ordering of Knowledge Evidence
- Minor statement changes in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit specifies the skills and knowledge required to safely operate a boom-type Elevating Work Platform (EWP) where the length of the boom is 11 metres or more in accordance with all relevant legislative requirements. Competence in this unit, does not in itself result in a Risk Work Licence (HRWL) to operate this plant.

Boom-type elevating work platform means a telescoping device, hinged device, or articulated device, or any combination of these, used to support a platform on which personnel, equipment and materials may be elevated.

A person performing this work is required to hold a boom-type elevating work platform HRWL.

This unit requires a person operating an EWP to:

- plan for the work/task
- prepare for the work/task
- perform work/task
- pack up.

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit of competency.

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) Regulations and meets Commonwealth, State and Territory HRWL requirements.

The National Assessment Instrument (NAI) is the mandated assessment for the HRWL to operate the relevant licencing class as detailed in this unit.

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Pre-requisite Unit

Not applicable

Competency Field

LIC - Licencing Units

Unit Sector

Not applicable

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Plan work/task	**1.1** Task requirements are identified from work orders or equivalent and confirmed with relevant people and a site inspection is completed in accordance with workplace procedures
	1.2 Work area ground/operating surface is assessed to determine suitability for operational use of EWP in accordance with manufacturer requirements and workplace procedures
	1.3 EWP capabilities are established for the load/s and work/task requirements in accordance with manufacturer requirements and workplace procedures
	1.4 Appropriate paths for operating the EWP and moving in work area are assessed and determined in accordance with workplace procedures
	1.5 Relevant hazard and risk control measures are applied and advised to relevant person/s in accordance with workplace procedures

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	1.6	Traffic management plan implementation is confirmed in accordance with workplace procedures
	1.7	Appropriate communication procedures are identified, with relevant people in accordance with workplace procedures
	1.8	All work is confirmed to ensure coverage of work/task requirements for the relevant work area in accordance with workplace procedures
2 Prepare for work/task	**2.1**	Consultation with workplace person/s is maintained to ensure workplan is clear and consistent with site requirements in accordance with workplace procedures
	2.2	Risk control measures for hazards identified are checked for implementation in accordance with workplace procedures
	2.3	Safety equipment including Personal Protective Equipment (PPE) are inspected, fitted correctly and used in accordance with manufacturer requirements and safe work procedures
	2.4	EWP is accessed in a safe manner in accordance with manufacturer requirements and safe work procedures
	2.5	Pre-start EWP checks are carried out in accordance with manufacturers requirements and safe work procedures
	2.6	EWP is started and is checked for any abnormal noises in accordance safe work procedures
	2.7	EWP is positioned correctly as per work plan in work area in accordance with relevant manufacturer requirements and safe work procedures
	2.8	EWP is stabilised appropriately in accordance with the workplan, relevant manufacturer requirements and safe work procedures

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	2.9	Operational checks from base controls are carried out in accordance with relevant manufacturer requirements and safe work procedures
	2.10	All platform controls are located, identified and tested in accordance with manufacturer requirements and safe work procedures
	2.11	All damage and defects are reported and appropriate action is taken to rectify in accordance with manufacturer requirements and safe work procedures
	2.12	EWP logbook is inspected and is correct for the EWP, is completed and signed in accordance with manufacturer requirements and safe work procedures
	2.13	Weather and work environmental conditions are assessed to determine any impact on EWP operation and positioning as per workplan in accordance with manufacturer requirements and safe work procedures
3 Perform work/task	**3.1**	Relevant hazard prevention/control measures identified are checked for implementation in accordance with safe work procedures
	3.2	EWP is safely located at point of work in work area in accordance with safe work procedures
	3.3	EWP platform is positioned for work tasks and stability and all operations are monitored constantly in accordance with safe work procedures
	3.4	Work gear and tools are stowed and secured in accordance with safe work procedures
	3.5	EWP is operated using all movements in accordance with safe work procedures and manufacturer requirements
	3.6	Unplanned and unsafe situations are responded to in accordance with safe work procedures

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	3.7	All communication signals are correctly interpreted and followed whilst EWP is operated in accordance with safe work procedures
	3.8	EWP platform is accessed and egressed in accordance with safe work procedures and manufacturer requirements
	3.9	EWP is parked, switched off and isolated appropriately in accordance with manufacturer requirements and safe work procedures
4 Pack up	**4.1**	Post-operational EWP checks are carried out in accordance with manufacturer requirements and safe work procedures
	4.2	EWP boom is retracted, lowered, stowed and secured in accordance with manufacturer requirements and safe work procedures
	4.3	Safety equipment and PPE is disconnected from platform in accordance with safe work procedures
	4.4	Relevant motion locks and brakes are applied as required in accordance with manufacturer requirements and safe work procedures
	4.5	Outriggers and/or stabilisers, plates or packing if fitted are stowed and secured in accordance and with manufacturer requirements and safe work procedures
	4.6	EWP is shut down in accordance with manufacturer requirements and safe work procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

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Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLILIC2005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

Links

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Assessment Requirements for TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package:

- Minor statement changes in unit Application
- Minor changes and re-ordering of Performance Evidence
- Minor re-ordering of Knowledge Evidence
- Minor statement changes in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- advising relevant person/s on site in relation to any hazards and risk elimination/control strategies
- applying safe operating procedures for an Elevating Work Platform (EWP) including all functions within the safe working rated capacity including:
  - boom/s as low as possible and fully retracted whilst travelling (self propelled EWP only)
  - boom/s in line with EWP where practical whilst travelling (self propelled EWP only)
  - EWP stability
  - gently accelerating and braking to minimise boom/s swing (self propelled EWP only)
  - maintaining safe operating speed in relation to the work condition
  - travelling with work platform raised to an appropriate height for the terrain and visibility in relation to direction of travel (self propelled EWP only and in accordance with manufacturers specifications)
- applying emergency procedures
- applying traffic management plan procedures relevant to their role in the work area
- carrying out operational checks on EWP including:
  - testing of all EWP safety devices
  - all controls are located, identified and tested for functionality from the base controls and platform controls
  - hazard warning systems including travel beepers and lights are functional
  - start-up is in accordance with manufacturer requirements
  - steering, transmission and brake functions comply with operating requirements (self

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propelled EWP only)
    - there are no unusual noises
- carrying out pre-start checks, including visual inspection which must include:
    - battery fluid level as required by manufacturer requirements
    - checking compliance plate is relevant to the load/s being used on the EWP
    - engine / mechanical fluid level checks as required by manufacturer requirements
    - ensuring availability of correct logbook and updating records as required
    - ensuring EWP platform and attachment/s fitted in platform are secured
    - evidence of damage
    - fluid leaks
    - lights are working effectively (where fitted)
    - safety equipment checks
    - signage and labels to ensure they are visible and legible
    - structural weaknesses including paint separation or stressed welds
    - wheels and tyres for damage/correct inflation if applicable
- checking compliance plate and load chart for reach requirements and load suitability
- clarifying workplan and checking understanding
- complying with Commonwealth, State and/or Territory work health and safety (WHS)/occupational health and safety (OHS)/occupational safety and health (OSH) legislation and regulations
- controlling and operating a boom type elevating work platform ensuring movements and control functions are safe, smooth and comply with operating requirements including:
    - any combination of the movement of the extending boom used to support a platform on which personnel, equipment and materials are elevated to perform the work task/s
    - avoidance of ground depressions
    - correctly using observer guidance of work platform, main chassis and extending boom
    - demonstrating the safe operation of an EWP in forward and reverse, while maintaining visibility (where applicable)
    - driving (where applicable) applicable to conditions and moving platform and load/s safely
    - ensuring warning devices are functioning correctly
    - interpreting directional arrows correctly on platform controls during forward, reverse, left and right
    - lowering boom to its resting position
    - monitoring platform, main chassis and extending boom movement constantly ensuring safe work procedures are followed
    - raising platform and slewing within manufacturer requirements
    - raising platform to its full extent or 75% of the maximum height capacity (whichever is greater)
    - stability of the EWP and the work platform
    - manoeuvring and positioning the platform to perform work task/s safely whilst at its full extent or a minimum height of 75% of the maximum capacity (whichever is greater)

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- conducting and applying hazard identification and risk elimination or minimisation strategies including:
    - barricades and controls to prevent the risk of collision with people, moving vehicles and fixed structures
    - environmental conditions including:
        - wind
        - lightning
        - water impacted ground
        - rain
        - extreme heat
        - Ultra Violet (UV) exposure
    - ground conditions (surface and slopes) and assessing work area operating surface suitability based on machine and task requirements
    - overhead hazards including electric lines and service pipes
    - personal protective equipment (PPE)
    - restricted areas and crush points from work platform and external surroundings
    - safety related tags on electrical switches/isolators that have an impact on point of work of EWP operator
    - sufficient lighting
    - suitable area for set-up, positioning and safely operating EWP
    - suitable firm and stable operating surface
    - use of safety observer
- entering work platform correctly including:
    - lowering platform safely and stably to appropriate height to access safely
    - clipping on of fall restraint/arrest device
    - accessing platform safely
- exiting work platform correctly including:
    - lowering platform safely and stably to appropriate height to egress safely
    - unclipping of fall restraint/arrest device
    - exiting platform safely
- identifying, isolating and tagging out defective equipment and reporting to authorised person/s
- inspecting and using relevant safety equipment, including:
    - anchor point/s
    - emergency retrieval system from base controls and platform controls where fitted
    - energy absorber/s
    - lanyard/s
    - safety harness/es
- interpreting and confirming relevant documentation, workplace instructions, safety information and emergency procedures for the work task and relevant area
- interpreting workplace procedures in relation to various work environmental conditions

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- maintaining communication with other workplace personnel using appropriate workplace procedures including procedures to ensure all movements are conveyed clearly and succinctly including:
  - 2-way radio
  - audible and visual warning devices
  - making and interpreting hand signals
  - questioning to confirm understanding
  - signage
  - written instructions
- recording and maintaining accurate information relating to EWP operations
- reporting to relevant person/s on site risk control measures that are not in place or deficient
- stabilising procedures for an EWP including:
  - checking levels
  - removing obstacles and obstructions
  - deploying and retracting outriggers (if fitted)
  - establishing correct size plates for packing (if required)
- shutting down a boom type EWP in accordance with manufacturer requirements and workplace procedures
- using and interpreting EWP manufacturer requirements and data, including compliance plate and load chart, to enable correct EWP selection for task including:
  - boom
  - platform
  - weight including outrigger load or wheel load.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- Australian and industry standards, codes of practice and guidelines to safely operate an EWP (boom length 11 metres or more) including:
  - nominal reach, measured horizontally from centre point of rotation to outer edge of platform in its most extended position
  - vertical distance from floor of platform to surface supporting elevating work platform with platform at its maximum height
- appropriate mathematical calculations to estimate loads ensuring EWP is not overloaded
- appropriate workplace communication procedures including:
  - 2-way radio
  - audible and visual warning devices
  - questioning techniques
  - signage
  - hand signals

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    - traffic warning systems
    - written instructions
- compliance with permit condition requirements including:
    - from electrical supply authority
    - if operating on roads or footpaths
- EWP characteristics and capabilities, manufacturer requirements and instructions
- hazards including:
    - all ground and /or operating surface hazards
    - traffic including pedestrians, vehicles, other mobile plant and building structures
    - overhead hazards including electric lines, service pipes, doorways, roof beams, and lights
    - obstacles or obstructions
    - insufficient lighting
    - other relevant hazards
- identification and avoidance of person/s potential crush or entrapment points
- identification and avoidance of potential contact with overhead electrical conductor's
- identification and avoidance of potential contact with structures near work platform/boom or chassis
- impact of the following on the operation of the EWP including:
    - failure/loss of control including brakes and steering
    - failure of equipment including hydraulic system
    - EWP and platform instability due to:
        - deterioration of ground/operating surface condition
        - gradient of operating surface
        - overloading
        - poor load placement
        - irregular loads
    - emergency procedures and safety equipment, including the use of:
        - safety harness/es
        - energy absorbers
        - lanyard/s
        - anchor point/s
        - emergency retrieval systems
- lock out and tag out procedures
- problems, and appropriate response procedures to unplanned and/or unsafe environmental conditions
- procedures for recording, reporting and maintaining workplace records and information
- relevant manufacturer requirements and instructions
- relevant procedures for refuelling/recharging EWP using appropriate PPE
- risk assessment process including hierarchy of control:
    - elimination

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  - substitution
  - isolation
  - engineering controls
  - administrative controls
  - personal protective equipment (PPE)
- problems and equipment faults, and implementing appropriate response procedures to unplanned and/or unsafe situations
- procedures for shutting down a boom type EWP in accordance with manufacturer requirements
- relevant documentation requirements
- suitability and lifting capability of the EWP to be used
- traffic management plan procedures and requirements
- typical routine problems encountered operating a EWP and adjustments required for correction
- wind speed factors that affect stability of EWP as per manufacturer requirements
- work area operating surface suitability including issues with:
  - backfilled ground
  - bitumen (damaged, cracked)
  - concrete (damaged, cracked)
  - hard compacted soil
  - potholes
  - railway tracks
  - rough uneven or difficult terrain including sloping surfaces, uneven surfaces, steel decks and grates
  - soft soils
  - trench covers
- work health and safety (WHS)/occupational health and safety (OHS)/occupational safety and health (OSH) and codes of practice requirements for boom type elevating work platforms
- work plan which may be verbal, documented/written, or electronically generated

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace

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conditions.

- Simulators must not be used in the assessment of this unit of competency

Resources for assessment must include access to:

- appropriate boom-type elevating work platform (boom length 11 metres or more) in a safe/serviceable condition in accordance with manufacturer requirements
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including:
  - approved codes of practice and relevant guidance material
  - relevant Australian technical standards
  - manufacturer guidelines (instructions, requirements or checklists), relevant industry standards and operating procedures (where applicable).

Links

Companion Volume Implementation Guide - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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AUR Automotive Retail, Service and Repair Training Package

Modification History

Version	Status	Release Date	Approval Process	Comments
6.0	Current	November 2020	AISC process	This version of AUR training package replaces Version 5.0. **Qualifications:** 41 updated; 7 deleted. **Units of competency:** 15 newly created units to reflect changes in the industry; 289 updated. **Skill sets:** 9 newly created skill sets. See details below or refer to mapping tables in this Implementation Guide for further information. **41 updated qualifications:** • AUR10120 Certificate I in Automotive Vocational Preparation • AUR20220 Certificate II in Automotive Air Conditioning Technology • AUR20320 Certificate II in Bicycle Mechanical Technology • AUR20420 Certificate II in Automotive Electrical Technology • AUR20520 Certificate II in Automotive Servicing Technology • AUR20720 Certificate II in Automotive Vocational Preparation • AUR20820 Certificate II in Outdoor Power Equipment Technology • AUR20920 Certificate II in Automotive Body Repair Technology • AUR21020 Certificate II in Motor Sport Technology • AUR21120 Certificate II in Automotive Sales • AUR21220 Certificate II in Automotive Underbody Technology • AUR21416 Certificate II in Automotive Cooling System Technology • AUR21520 Certificate II in Automotive

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				Cylinder Head Reconditioning • AUR21716 Certificate II in Exhaust System Technology • AUR21820 Certificate II in Automotive Steering and Suspension System Technology • AUR21920 Certificate II in Automotive Tyre Servicing Technology • AUR30220 Certificate III in Bicycle Workshop Operations • AUR30320 Certificate III in Automotive Electrical Technology • AUR30420 Certificate III in Agricultural Mechanical Technology • AUR30520 Certificate III in Marine Mechanical Technology • AUR30620 Certificate III in Light Vehicle Mechanical Technology • AUR30720 Certificate III in Outdoor Power Equipment Technology • AUR30820 Certificate III in Motorcycle Mechanical Technology • AUR30920 Certificate III in Motor Sport Technology • AUR31020 Certificate III in Automotive Sales • AUR31120 Certificate III in Heavy Commercial Vehicle Mechanical Technology • AUR31220 Certificate III in Mobile Plant Technology • AUR31420 Certificate III in Automotive Diesel Fuel Technology • AUR31520 Certificate III in Automotive Diesel Engine Technology • AUR31716 Certificate III in Forklift Technology • AUR31820 Certificate III in Heavy Commercial Trailer Technology • AUR31916 Certificate III in Elevating Work Platform Technology • AUR32120 Certificate III in Automotive Body Repair Technology • AUR32220 Certificate III in Automotive Glazing Technology

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				• AUR32320 Certificate III in Automotive and Marine Trimming Technology • AUR32420 Certificate III in Automotive Refinishing Technology • AUR40320 Certificate IV in Motor Sport Technology • AUR40520 Certificate IV in Vehicle Loss Assessing • AUR40620 Certificate IV in Automotive Electrical Technology • AUR40720 Certificate IV in Automotive Body Repair Technology • AUR40820 Certificate IV in Automotive Mechanical Overhauling **7 deleted qualifications:** • AUR20616 Certificate II in Marine Mechanical Technology • AUR21316 Certificate II in Automotive Braking System Technology • AUR21616 Certificate II in Automotive Driveline System Technology • AUR31616 Certificate III in Automotive Drivetrain Technology • AUR32016 Certificate III in Automotive Alternative Fuel Technology • AUR40416 Certificate IV in Automotive Performance Enhancement • AUR50316 Diploma of Motor Sport Technology **Minor release of the following 3 qualifications to include additional elective units** • AUR32516 Certificate III in Automotive Underbody Technology • AUR40216 Certificate IV in Mechanical Diagnosis • AUR50216 Diploma of Automotive Technology **15 new units of competency** • AURAFA110 Identify routine problems in an automotive workplace • AURBTR103 Retrofit electric drivetrain systems to bicycles

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				• AURBTR104 Diagnose and repair electric bicycles • AURBTA108 Disassemble and pack a bicycle for transport • AURETR149 Apply knowledge of ADAS technology in vehicle pre-repair scans • AURJTE103 Inspect and service motorcycle engines • AURJTE104 Diagnose and repair motorcycle engine management systems • AURJTR102 Diagnose and repair motorcycle charging systems • AURJTR103 Diagnose and repair motorcycle starting systems • AURJTR104 Diagnose and repair motorcycle dynamic control systems • AURPTR104 Inspect and service cordless electric tool skins • AURPTR105 Diagnose and repair cordless electric tool skins • AURPTR106 Deploy and service autonomous outdoor power equipment • AURVTN143 Identify and repair high strength aluminium components • AURRTR108 Diagnose and repair marine network electronic control systems **289 updated units of competency** • AURACA101 Respond to customer needs and enquiries in an automotive workplace • AURACA102 Manage complex customer requirements in an automotive workplace • AURACA103 Build customer relations in an automotive workplace • AURAFA103 Communicate effectively in an automotive workplace • AURAFA104 Resolve routine problems in an automotive workplace • AURAFA105 Write routine texts in an automotive workplace • AURAFA106 Conduct research and present technical reports • AURAFA108 Interpret and apply automotive repair instructions • AURAMA102 Communicate business

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				information in an automotive workplace • AURASA102 Follow safe working practices in an automotive workplace • AURBCA101 Work in a retail bicycle environment • AURBCA102 Select and adjust bicycles to fit riders • AURBTA102 Adjust bicycles and components • AURBTA103 Assemble bicycles • AURBTA104 Assemble new boxed bicycles for retail sale • AURBTA106 Assemble components for custom bicycles • AURBTB101 Service and repair bicycle mechanical braking systems • AURBTD101 Service bicycle steering systems • AURBTD102 Service bicycle suspension systems • AURBTD103 Repair and overhaul bicycle steering systems • AURBTD104 Repair and overhaul bicycle suspension systems • AURBTJ101 Remove, repair and refit bicycle tyres • AURBTJ102 Service bicycle wheels and hubs • AURBTJ103 Design and build bicycle wheels • AURBTJ104 Repair and overhaul bicycle wheels and hubs • AURBTK101 Maintain specialised bicycle repair tools and equipment • AURBTR101 Inspect and service power-assisted bicycles • AURBTV101 Remove, refit and adjust bicycle accessories • AURETB101 Diagnose and repair electric braking systems • AURETD101 Diagnose and repair electronically controlled steering systems • AURETH101 Depower and reinitialise battery electric vehicles • AURETH103 Diagnose and repair high

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				voltage rechargeable energy storage systems in battery electric vehicle • AURETH104 Diagnose and repair traction motor speed control systems in battery electric vehicles • AURETH105 Diagnose and repair high voltage traction motors in battery electric vehicles • AURETH106 Diagnose and repair auxiliary motors and associated components in battery electric vehicles • AURETH107 Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles • AURETH108 Diagnose and repair HVAC and rechargeable energy storage cooling systems in battery electric vehicle • AURETH109 Diagnose and repair DC to DC converters in battery electric vehicles • AURETH110 Diagnose and repair high voltage rechargeable energy storage systems in hybrid electric vehicles • AURETH114 Diagnose complex faults in hybrid and battery electric vehicle network management systems • AURETR103 Identify automotive electrical systems and components • AURETR104 Diagnose complex faults in convenience and entertainment systems • AURETR112 Test and repair basic electrical circuits • AURETR115 Inspect, test and service batteries • AURETR116 Read and apply vehicle wiring schematics and drawings • AURETR120 Diagnose and repair network electronic control systems • AURETR122 Diagnose and repair vehicle dynamic control systems • AURETR123 Diagnose and repair spark ignition engine management systems • AURETR124 Diagnose and repair compression ignition engine management systems • AURETR125 Test, charge and replace

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				batteries and jump-start vehicles • AURETR128 Diagnose and repair instruments and warning systems • AURETR129 Diagnose and repair charging systems • AURETR130 Diagnose and repair starting systems • AURETR131 Diagnose and repair ignition systems • AURETR132 Diagnose and repair automotive electrical systems • AURETR135 Apply knowledge of petrol and diesel engine operation • AURETR137 Diagnose complex faults in light vehicle safety systems • AURETR138 Diagnose complex faults in motorcycle electrical and electronic systems • AURETR139 Diagnose complex faults in light vehicle theft-deterrent systems • AURETR140 Diagnose complex faults in vehicle monitoring and protection systems • AURETR143 Diagnose and repair electronic body management systems • AURETR144 Diagnose and repair integrated engine and transmission management systems • AURETR146 Remove and refit vehicle batteries • AURETR147 Recharge vehicle batteries • AURETR236 Diagnose and repair electronically controlled suspension systems • AURETU102 Recover vehicle refrigerants • AURETU103 Service air conditioning and HVAC systems • AURETU104 Diagnose and repair air conditioning and HVAC components • AURETU105 Retrofit and modify air conditioning and HVAC systems • AURETU106 Diagnose complex faults in air conditioning and HVAC systems • AURHTB101 Diagnose and repair heavy vehicle air braking systems • AURHTB106 Diagnose complex faults in

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				heavy commercial vehicle braking systems • AURHTB107 Diagnose and repair heavy commercial vehicle electronic braking systems • AURHTD102 Diagnose and repair heavy commercial vehicle steering systems • AURHTD103 Diagnose and repair heavy commercial vehicle suspension systems • AURHTD104 Carry out heavy vehicle wheel alignment operations • AURHTD106 Diagnose complex faults in heavy commercial vehicle steering and suspension systems • AURHTE102 Diagnose and repair heavy vehicle compression ignition engines • AURHTE103 Diagnose complex faults in heavy vehicle diesel engines • AURHTF102 Diagnose and repair heavy vehicle diesel fuel injection systems • AURHTJ102 Select heavy vehicle tyres, wheels and rims for specific applications • AURHTJ103 Remove, inspect and refit heavy vehicle wheel and tyre assemblies • AURHTJ104 Remove, inspect, repair and refit agricultural equipment tyres and tubes • AURHTJ106 Remove, inspect, repair and refit heavy vehicle tyres and tubes • AURHTL101 Inspect, diagnose and repair alternative fuel systems in heavy vehicle engines • AURHTQ102 Diagnose and repair heavy commercial vehicle final drive assemblies • AURHTQ103 Diagnose and repair heavy vehicle drive shafts • AURHTR105 Diagnose and repair heavy commercial trailer electronically controlled roll stability systems • AURHTX101 Diagnose and repair heavy vehicle manual transmissions • AURHTX103 Diagnose and repair heavy vehicle automatic transmissions • AURHTX104 Diagnose and repair heavy vehicle clutch systems • AURHTX106 Diagnose complex faults in heavy commercial vehicle transmission

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				and driveline systems • AURHTY102 Diagnose and repair mechanical connections of heavy vehicles and trailers over 4.5 tonnes • AURHTZ101 Diagnose and repair heavy vehicle emission control systems • AURJTB101 Diagnose and repair motorcycle braking systems • AURJTD103 Diagnose and repair motorcycle suspension systems • AURJTD104 Diagnose and repair motorcycle steering systems • AURJTD105 Diagnose complex faults in motorcycle steering and suspension systems • AURJTE101 Diagnose and repair motorcycle engines • AURJTE102 Diagnose complex faults in motorcycle engine and transmission systems • AURJTQ102 Diagnose and repair motorcycle driveline systems • AURJTX101 Diagnose and repair motorcycle clutch systems • AURJTX102 Diagnose and repair motorcycle manual transmissions • AURJTX103 Diagnose and repair motorcycle automatic transmissions • AURKTA109 Diagnose complex faults in mobile plant hydraulic systems • AURKTA111 Diagnose and repair mobile plant hydraulic systems • AURKTB101 Diagnose and repair mobile plant braking systems • AURKTB103 Diagnose complex faults in mobile plant braking systems • AURKTD101 Diagnose and repair mobile plant suspension systems • AURKTD102 Diagnose and repair mobile plant steering systems • AURKTD105 Diagnose complex faults in mobile plant steering and suspension systems • AURKTQ101 Diagnose and repair mobile plant final drive assemblies

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				• AURKTR101 Diagnose and repair electronic over hydraulic control systems • AURKTX101 Diagnose and repair powershift transmissions • AURKTX103 Diagnose complex faults in mobile plant transmission and driveline systems • AURKTX104 Diagnose and repair continuously variable transmissions • AURLTA101 Identify automotive mechanical systems and components • AURLTB103 Diagnose and repair light vehicle hydraulic braking systems • AURLTB104 Diagnose complex faults in light vehicle braking systems • AURLTD104 Diagnose and repair light vehicle steering systems • AURLTD105 Diagnose and repair light vehicle suspension systems • AURLTD106 Carry out light vehicle wheel alignment operations • AURLTD109 Diagnose complex faults in light vehicle steering and suspension systems • AURLTE102 Diagnose and repair light vehicle engines • AURLTE104 Diagnose complex faults in light vehicle petrol engines • AURLTE105 Diagnose complex faults in light vehicle diesel engines • AURLTF101 Diagnose and repair light vehicle mechanical fuel injection systems • AURLTF102 Diagnose and repair light vehicle diesel fuel injection systems • AURLTJ102 Remove, inspect, repair and refit light vehicle tyres and tubes • AURLTJ113 Remove, inspect and re-fit light vehicle wheel and tyre assemblies. • AURLTJ104 Provide advice on the effects of wheel and tyre combinations • AURLTQ101 Diagnose and repair light vehicle final drive assemblies • AURLTQ102 Diagnose and repair light vehicle drive shafts • AURLTX101 Diagnose and repair light

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				vehicle manual transmissions • AURLTX102 Diagnose and repair light vehicle automatic transmissions • AURLTX103 Diagnose and repair light vehicle clutch systems • AURLTX104 Diagnose complex faults in light vehicle automatic transmission and driveline systems • AURLTZ101 Diagnose and repair light vehicle emission control systems • AURMBA101 Transport light competition vehicles and support equipment • AURMCA101 Manage motor sport team media liaison • AURMCA102 Manage motor sport team promotional partnerships and marketing • AURMDA101 Develop and update motor sport industry knowledge • AURMDA107 Act as a steward at motor sport events • AURMGA101 Set up and dismantle temporary work location and equipment at motor sport events • AURMGA102 Manage personal presentation and development in a motor sport environment • AURMMA101 Operate in a motor sport environment • AURMMA102 Manage the preparation of motor sport competition vehicles • AURMMA103 Manage motor sport operations • AURMMA104 Manage motor sport team development • AURMMA108 Coordinate operations of a motor sport team • AURMTA101 Prepare and service light competition vehicles • AURMTA102 Assemble and prepare competition vehicles for motor sport events • AURMTA103 Determine material suitability for competition vehicle components • AURMTA104 Prepare competition

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				vehicles at motor sport events • AURMTA109 Collect and log motor sport data • AURMTE101 Test engines using a dynamometer • AURMTQ101 Analyse and repair faults in performance driveline systems • AURNTB101 Diagnose and repair forklift hydraulic braking systems • AURNTD101 Diagnose and repair forklift hydrostatic steering systems • AURPTA101 Carry out pre-repair operations to outdoor power equipment • AURPTA102 Carry out minor adjustments to outdoor power equipment • AURPTA103 Service and repair rotary cutting systems • AURPTA104 Service and repair drum cutting systems • AURPTA105 Service and repair chainsaw cutting systems • AURPTA106 Inspect and service line trimming systems and components • AURPTA107 Service and repair post boring systems • AURPTA108 Service and repair post hole digging systems • AURPTA109 Service and repair reciprocating cutting systems • AURPTA110 Inspect and service pumping systems • AURPTA111 Diagnose and repair pumping systems • AURPTE102 Inspect and service outdoor power equipment engines • AURPTE103 Diagnose and repair outdoor power equipment engines • AURPTE104 Overhaul outdoor power equipment engines • AURPTR101 Test and service 240 volt portable generators • AURPTR102 Test and service electric outdoor power equipment • AURPTR103 Service and repair outdoor power equipment engine management

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				systems • AURRTC101 Diagnose and repair marine exhaust and cooling systems • AURRTD101 Diagnose and repair marine steering systems • AURRTE106 Diagnose and repair marine outboard engines • AURRTE107 Diagnose and repair marine inboard engines • AURRTQ104 Diagnose and repair marine inboard propeller drive systems • AURRTQ106 Diagnose and repair marine jet drive propulsion systems • AURRTR106 Diagnose and repair marine electrical systems • AURRTX103 Diagnose and repair marine outboard and stern drive transmissions • AURRTX104 Diagnose and repair marine inboard transmissions • AURSBA102 Identify and match uncommon automotive parts • AURSCA101 Select and supply automotive parts and products • AURSCA102 Present automotive products and services for sale • AURSCA103 Apply sales procedures in an automotive workplace • AURSCA104 Carry out cash and non-cash payment operations • AURSCA105 Sell automotive products and services • AURSCA106 Promote automotive products and services • AURSCA109 Provide vehicle technology information • AURSCA111 Conduct online transactions in an automotive workplace • AURSCP101 Provide information to customers on automotive refinishing products • AURTTA104 Carry out servicing operations • AURTTA105 Select and use bearings, seals, gaskets, sealants and adhesives • AURTTA113 Diagnose and repair

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				hydraulic systems • AURTTA118 Develop and carry out diagnostic test strategies • AURTTA121 Diagnose complex system faults • AURTTA125 Diagnose complex faults in vehicle integrated stability control systems • AURTTA126 Diagnose complex faults in electronic over hydraulic systems • AURTTA127 Carry out basic vehicle servicing operations • AURTTB101 Inspect and service braking systems • AURTTC103 Diagnose and repair cooling systems • AURTTE104 Inspect and service engines • AURTTF101 Inspect and service petrol fuel systems • AURTTF102 Inspect and service diesel fuel injection systems • AURTTF105 Diagnose and repair engine forced-induction systems • AURTTF106 Diagnose and repair petrol carburettor systems • AURTTK102 Use and maintain tools and equipment in an automotive workplace • AURTTL102 Diagnose and repair CNG fuel systems • AURTTL104 Inspect and service LNG fuel systems • AURTTL105 Diagnose and repair LNG fuel systems • AURTTL108 Diagnose and repair LPG fuel systems • AURTTL111 Diagnose complex faults in CNG fuel systems • AURTTL112 Diagnose complex faults in LNG fuel systems • AURTTL113 Diagnose complex faults in LPG fuel systems • AURTTQ103 Inspect and service drive shafts • AURTTR101 Diagnose complex faults in engine management systems • AURTTS101 Fabricate exhaust systems

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				and components • AURTTX102 Inspect and service manual transmissions • AURTTX103 Inspect and service automatic transmissions • AURTTX104 Inspect and service hydrostatic transmissions • AURTTX106 Diagnose and repair hydrostatic transmissions • AURTTZ102 Diagnose and repair exhaust systems • AURVNA107 Apply automotive mechanical and electrical knowledge to vehicle loss assessments • AURVNN101 Evaluate vehicle bodywork for damage and identify repair requirements • AURVNP101 Evaluate vehicle paintwork for damage and identify refinish requirements • AURVTA104 Inspect damaged vehicle systems and recommend repairs • AURVTG101 Repair laminated glass windscreens • AURVTG102 Remove and install rubber glazed windscreens • AURVTG103 Remove and install butyl sealed windscreens • AURVTG104 Remove and install direct glazed windscreens • AURVTG105 Remove and install framed type windscreens • AURVTG109 Remove and install vehicle fixed body glass • AURVTG110 Remove and install vehicle movable body glass • AURVTG112 Remove and install heavy vehicle rubber and direct glazed windscreens • AURVTG113 Remove and install large vehicle windscreens • AURVTN102 Carry out non-structural vehicle panel repairs • AURVTN104 Remove, replace and align bolt-on vehicle body panels and

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				components • AURVTN111 Remove and install vehicle rear vision mirrors • AURVTN113 Carry out paint-less dent repairs on vehicle body panels • AURVTN115 Repair vehicle body panels using metal finishing • AURVTN116 Repair vehicle body panels using filler • AURVTN119 Repair vehicle structural damage by riveting • AURVTN120 Remove and replace major welded panels on vehicles • AURVTN123 Repair adhesive bonded structural damage on vehicles • AURVTN126 Repair vehicle aluminium body panels without the use of body filler • AURVTN127 Repair vehicle aluminium body panels using filler • AURVTN128 Identify and repair high strength steel vehicle components • AURVTN132 Inspect vehicle damage and determine repair procedures • AURVTN133 Service and repair air compressors and components • AURVTN134 Evaluate vehicle body repair materials, equipment and work processes • AURVTN135 Apply original equipment manufacturer repair procedures during vehicle repairs • AURVTN137 Test vehicle components for correct operation • AURVTN138 Carry out basic repairs to vehicle body panels • AURVTN140 Repair vehicle plastic components • AURVTP101 Remove paint from vehicle painted surfaces • AURVTP103 Prepare vehicle spray painting equipment for use • AURVTP104 Apply basic colour matching techniques using vehicle paint codes • AURVTP107 Touch up minor vehicle

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				paintwork damage • AURVTP109 Apply vehicle body film wrapping • AURVTP110 Prepare and operate vehicle paint drying equipment • AURVTP111 Apply solid acrylic two-pack materials to vehicle components • AURVTP112 Apply air dry and polyurethane refinishing materials • AURVTP113 Prepare vehicle substrates for refinishing • AURVTP114 Colour match multi-layer and clear over base two-pack paints on vehicles and components • AURVTP115 Match direct gloss solid paint colour on vehicles or components • AURVTP116 Rectify and touch up vehicle direct gloss paint faults using two-pack systems • AURVTP117 Rectify and touch up vehicle paint faults using clear over base two-pack systems • AURVTP118 Rectify vehicle multi-layer and pearl paint faults using two-pack systems • AURVTP123 Apply clear over base two-pack refinishing materials to vehicle body components • AURVTP124 Apply clear over base multi-layer and pearl refinishing materials to vehicle body components • AURVTP125 Apply water-based refinishing materials to vehicle bodies and substrates • AURVTP128 Carry out custom painting techniques to vehicle body panels • AURVTP129 Prepare surface and prime repaired body panels • AURVTP130 Apply paint to vehicle body panels • AURVTP131 Cut and polish painted vehicle body panels • AURVTP132 Prepare and mask vehicle body panel surfaces • AURVTS103 Fabricate vehicle composite

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				material components • AURVTS104 Repair vehicle composite material components • AURVTS105 Fabricate vehicle body panels and components • AURVTT121 Select and apply adhesives in automotive and marine service and repair work • AURVTW101 Carry out manual metal arc welding on components • AURVTW103 Carry out advanced gas metal arc welding on vehicle body sections • AURVTW104 Carry out tungsten inert gas welding • AURVTW105 Carry out spot welding • AURVTW109 Carry out basic gas metal arc welding **9 newly created skill sets:** • AURSS00054 Light Vehicle Automatic Driveline Technology Skill Set • AURSS00055 Heavy Vehicle Automatic Driveline Technology Skill Set • AURSS00056 Light Vehicle Manual Driveline Technology Skill Set • AURSS00057 Heavy Vehicle Manual Driveline Technology Skill Set • AURSS00058 LPG Fuel Systems Skill Set • AURSS00059 LNG Fuel Systems Skill Set • AURSS00060 CNG Fuel Systems Skill Set • AURSS00061 Motorsports Marketing Skill Set • AURSS00062 Electric Bicycle Skill Set
5.0	Superseded	December 2018	AISC process	Two revised qualifications, two new units of competency, 23 revised units of competency and 4 new skill sets. This training package also includes 43 new releases of qualifications to update packaging rules. Refer to the mapping for more information. **Qualifications (updated)** • AUR32518 Certificate III in Automotive Underbody Technology • AUR40718 Certificate IV in Automotive

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				Body Repair Technology **Units of competency (new)** • AURRTF001 Diagnose and repair petrol and diesel marine fuel systems • AURHTJ007 Remove, inspect, repair and refit industrial tyres and tubes **Units of competency (updated)** • AURANN011 Estimate and quote automotive body repairs • AURETD011 Diagnose and repair electronically controlled steering systems • AURETR136 Diagnose and repair electronically controlled suspension systems • AURHTB011 Diagnose and repair heavy vehicle air braking systems • AURHTB012 Diagnose and repair heavy vehicle hydraulic and air over hydraulic braking systems • AURKTJ011 Remove, inspect and fit earthmoving and off-the-road tyres • AURKTJ012 Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies • AURKTJ013 Perform minor repairs to earthmoving and off-the-road tyres • AURKTJ015 Select earthmoving and off-the-road tyres, wheels and rim assemblies for specific applications • AURKTJ016 Use earthmoving and off-the-road tyre handlers • AURLLD011 Determine compliance of steering and suspension modifications • AURLTD013 Carry out advanced light vehicle wheel alignment operations • AURLTJ011 Select light vehicle tyres and wheels for specific applications • AURLTJ013 Remove, inspect and refit light vehicle wheel and tyre assemblies • AURLTQ012 Diagnose and repair light vehicle drive shafts • AURLTX013 Diagnose and repair light vehicle clutch systems • AURTTB012 Attach friction materials and

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				radius grind • AURTTB013 Machine brake drums and brake disc rotors • AURTTB015 Assemble and fit braking system components • AURTTJ011 Balance wheels and tyres • AURTTJ012 Remove, inspect and refit wheel hubs and associated brake components • AURTTX015 Inspect and service clutch systems • AURVTW018 Carry out oxyacetylene welding, thermal heating and cutting **Skill sets (new)** • AURSS00050 Vehicle body repair estimator skill set • AURSS00051 Marine transition skill set • AURSS00052 Light Vehicle Wheel Alignment Skill Set • AURSS00053 Heavy Vehicle Wheel Alignment Skill Set.
4.0	Superseded	January 2018	AISC process	One qualification updated. **Qualification (updated)** AUR20216 Certificate II in Automotive Air Conditioning Technology modified and recoded to AUR20218. AURETU005 Retrofit and modify air conditioning and HVAC systems moved from the qualification's core to elective unit bank.
3.0	Superseded	April 2016	AISC process	53 new qualifications, four revised qualifications. 604 new units of competency recoded to conform with new standards for Training Packages. 20 revised units of competency. 23 revised and recoded skill sets. This training package replaces both AUR Release 2.1 and AUR12 Release 2.1 Refer to mapping for more information.
2.1	Superseded	February 2015	AISC process	One new skill set updated to correct data **Skill set (new)** • AURSS00026 Percussive Drill

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				Maintenance and Advanced Systems Diagnosis Skill Set
2.0	Superseded	January 2015	AISC process	Three new qualifications, 31 new units of competency. Four revised units of competency. The remainder of qualifications and units for the Automotive Retail, Service and Repair industry are in AUR12 Version 2.0. **Qualifications (new)** • AUR30514 Certificate III in Marine Mechanical Technology • AUR31114 Certificate III in Heavy Commercial Vehicle Mechanical Technology • AUR40514 Certificate IV in Vehicle Loss Assessing **Units of competency (new)** • AURAFA009 Carry out research into the automotive industry • AURETK003 Operate electrical test equipment • AURETR046 Remove and refit vehicle batteries • AURETR047 Recharge vehicle batteries • AURETR048 Construct and test basic electronic circuits • AURTTA027 Carry out basic vehicle servicing operations • AURTTB007 Remove and replace brake assemblies • AURTTC004 Remove and replace radiators • AURTTD006 Remove and replace vehicle front suspension springs AURTTD007 Remove and replace steering assemblies • AURTTE006 Remove and replace conventional engine assemblies • AURTTE007 Dismantle and assemble single cylinder four-stroke petrol engines • AURTTE008 Dismantle and assemble multi-cylinder four-stroke petrol engines • AURTTE009 Remove and replace engine cylinder heads • AURTTJ003 Remove and replace wheel

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				and tyre assemblies AURTTX012 Dismantle and assemble manual conventional transmissions • AURTTX013 Remove and replace clutch assemblies • AURVLA001 Identify and report vehicle claim fraud indicators • AURVNA001 Provide vehicle loss assessments and identify repair requirements • AURVNA002 Provide vehicle total loss assessments • AURVNA003 Review vehicle repair quotations • AURVNA004 Apply insurance industry knowledge to vehicle loss assessments • AURVNA005 Inspect quality of vehicle repair work • AURVNA006 Identify and value vehicle salvage • AURVNA007 Apply automotive mechanical and electrical knowledge to vehicle loss assessments • AURVNA008 Apply automotive body and paint knowledge to vehicle loss assessments • AURVNN001 Evaluate vehicle bodywork for damage and identify repair requirements • AURVNP001 Evaluate vehicle paintwork for damage and identify refinish requirements • AURVTA005 Clean vehicles • AURVTP029 Prepare surface and prime repaired body panels • AURVTW010 Set up and use welding equipment **Units of competency (revised)** • AURKTJ001 Remove, inspect and fit earthmoving and off-the-road tyres • AURKTJ002 Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies • AURKTJ003 Perform minor repairs to earthmoving and off-the-road tyres

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				• AURKTJ006 Use earthmoving and off-the-road tyre handlers.
1.1	Superseded	February 2014	AISC process	One unit of competency updated to correct data **Units of competency (new)** • AURKTJ003 Perform minor repairs to earthmoving and off-the-road tyres.
1.0	Superseded	December 2013	AISC process	Primary release: One new qualification, seven new units of competency. The remainder of qualifications and units for the Automotive Retail, Service and Repair Industry are in AUR12 Version 2.0. **Qualification (new)** • AUR32613 Certificate III in Automotive Tyre Management **Units of competency (new)** • AURKKJ001 Manage use of tyre management software • AURKTJ001 Remove, inspect and fit earthmoving and off-the-road tyres • AURKTJ002 Remove, inspect and fit earthmoving and off-the-road wheel and rim assemblies • AURKTJ003 Perform minor repairs to earthmoving and off-the-road tyres • AURKTJ004 Conduct non-destructive testing of wheel and rim assemblies • AURKTJ005 Select earthmoving and off-the-road tyres, wheels and rim assemblies for specific applications • AURKTJ006 Use earthmoving and off-the-road tyre handlers.

Credit Arrangements

Credit Arrangements for AUR Automotive Retail, Service and Repair Training Package (Release 6.0)	
Qualification Code and Title	**Credit Arrangement Details**

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Credit Arrangements for AUR Automotive Retail, Service and Repair Training Package (Release 6.0)	
Qualification Code and Title	**Credit Arrangement Details**
AUR10120 Certificate I in Automotive Vocational Preparation	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR20116 Certificate II in Automotive Administration	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR20220 Certificate II in Automotive Air Conditioning Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR20320 Certificate II in Bicycle Mechanical Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR20420 Certificate II in Automotive Electrical Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR20520 Certificate II in Automotive Servicing Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR20720 Certificate II in Automotive Vocational Preparation	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR20820 Certificate II in Outdoor Power Equipment Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR20920 Certificate II in Automotive Body Repair Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR21020 Certificate II in Motor Sport Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR21120 Certificate II in Automotive Sales	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR21220 Certificate II in Automotive Underbody Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR21520 Certificate II in Automotive Cylinder Head Reconditioning	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR21820 Certificate II in Automotive Steering and Suspension System Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR21920 Certificate II in Automotive Tyre Servicing Technology	At the time of endorsement of this Training Package no national credit arrangements exist.

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Credit Arrangements for AUR Automotive Retail, Service and Repair Training Package (Release 6.0)	
Qualification Code and Title	**Credit Arrangement Details**
AUR30116 Certificate III in Automotive Administration	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR30220 Certificate III in Bicycle Workshop Operations	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR30320 Certificate III in Automotive Electrical Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR30420 Certificate III in Agricultural Mechanical Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR30520 Certificate III in Marine Mechanical Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR30620 Certificate III in Light Vehicle Mechanical Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR30720 Certificate III in Outdoor Power Equipment Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR30820 Certificate III in Motorcycle Mechanical Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR30920 Certificate III in Motor Sport Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR31020 Certificate III in Automotive Sales	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR31120 Certificate III in Heavy Commercial Vehicle Mechanical Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR31220 Certificate III in Mobile Plant Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR31316 Certificate III in Automotive Engine Reconditioning	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR31420 Certificate III in Automotive Diesel Fuel Technology	At the time of endorsement of this Training Package no national credit arrangements exist.

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Credit Arrangements for AUR Automotive Retail, Service and Repair Training Package (Release 6.0)	
Qualification Code and Title	**Credit Arrangement Details**
AUR31520 Certificate III in Automotive Diesel Engine Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR31820 Certificate III in Heavy Commercial Trailer Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR32120 Certificate III in Automotive Body Repair Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR32220 Certificate III in Automotive Glazing Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR32320 Certificate III in Automotive and Marine Trimming Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR32420 Certificate III in Automotive Refinishing Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR32518 Certificate III in Automotive Underbody Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR32616 Certificate III in Automotive Tyre Management	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR40116 Certificate IV in Automotive Management	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR40216 Certificate IV in Automotive Mechanical Diagnosis	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR40320 Certificate IV in Motor Sport Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR40520 Certificate IV in Vehicle Loss Assessing	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR40620 Certificate IV in Automotive Electrical Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR40720 Certificate IV in Automotive Body Repair Technology	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR40820 Certificate IV in Automotive Mechanical Overhauling	At the time of endorsement of this Training Package no national credit arrangements exist.

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Credit Arrangements for AUR Automotive Retail, Service and Repair Training Package (Release 6.0)	
Qualification Code and Title	**Credit Arrangement Details**
AUR50116 Diploma of Automotive Management	At the time of endorsement of this Training Package no national credit arrangements exist.
AUR50216 Diploma of Automotive Technology	At the time of endorsement of this Training Package no national credit arrangements exist.

Links

Companion Volume Implementation Guide is found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1

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AURSS00026 Percussive Drill Maintenance and Advanced Systems Diagnosis Skill Set

Modification History

Release	Comment
Release 1	New skill set.
Release 2	Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for technicians to diagnose and repair hydraulic and electronic over hydraulic system faults on machines associated with percussive drilling rigs in the mining industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of one of the following:

- Certificate III in Automotive Mechanical or Automotive Electrical Qualification
- Certificate III in Engineering - Mechanical or Electrical/Electronic Qualification
- Certificate III in Electrotechnology Electrician or Electrical Fitting Qualification

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **3 units of competency** must be completed.

Units

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Units	
AURKTR001	Diagnose and repair electronic over hydraulic control systems
AURTTA013	Diagnose and repair hydraulic systems
AURTTA026	Diagnose complex faults in electronic over hydraulic systems

Target Group

The skill set targets tradespeople and final year apprentices working as automotive mechanical/electrical technicians, engineering mechanical/electrical/electronic technicians or electrotechnology electrician/electrical fitters.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of those required to diagnose and repair hydraulic and electronic over hydraulic control system faults on machines associated with percussive drilling in the mining industry.

Custom Content Section

Not applicable.

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AURSS00027 Automotive CNG Installation, Service and Repair Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS00004 Automotive CNG Installation, Service and Repair Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for installing, servicing and repairing automotive CNG systems in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of one of the following:

- AUR30316Certificate III in Automotive Electrical Technology or equivalent
- AUR30416 Certificate III in Agricultural Mechanical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent
- AUR31116 Certificate III in Heavy Commercial Vehicle Mechanical Technology or equivalent
- AUR31216 Certificate III in Mobile Plant Technology or equivalent
- AUR31716 Certificate III in Forklift Technology, or equivalent
- AUR31916 Certificate III in Elevating Work Platform Technology or equivalent

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

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Skill Set Requirements

A total of **3 units of competency** must be completed.

Units	
AURTTL001	Inspect and service CNG fuel systems
AURTTL002	Diagnose and repair CNG fuel systems
AURTTL003	Install CNG fuel systems

Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to install, service and repair CNG systems and components in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to install, service and repair automotive CNG systems.

Custom Content Section

Not applicable.

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AURSS00028 Automotive CNG Service and Repair Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS00005 Automotive CNG Service and Repair Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for servicing and repairing automotive CNG systems in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of one of the following:

- AUR30316 Certificate III in Automotive Electrical Technology or equivalent
- AUR30416 Certificate III in Agricultural Mechanical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent
- AUR31116 Certificate III in Heavy Commercial Vehicle Mechanical Technology or equivalent
- AUR31216 Certificate III in Mobile Plant Technology or equivalent
- AUR31716 Certificate III in Forklift Technology or equivalent
- AUR31916 Certificate III in Elevating Work Platform Technology or equivalent

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **2 units of competency** must be completed.

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Units	
AURTTL001	Inspect and service CNG fuel systems
AURTTL002	Diagnose and repair CNG fuel systems

Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to service and repair CNG systems and components in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to service and repair automotive CNG systems.

Custom Content Section

Not applicable.

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AURSS00029 Automotive Electrical Skill Set for Light Vehicle Technicians

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS00006 Automotive Electrical Skill Set for Light Vehicle Technicians. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for light vehicle mechanical technicians to diagnose and repair electrical faults in contemporary vehicles in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of the following:

- AUR30616 Certificate III in Light Vehicle Mechanical Technology qualification or equivalent.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **11 units of competency** must be completed.

Units

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Units	
AURETK002	Use and maintain electrical test equipment in an automotive workplace
AURETR006	Solder electrical wiring and circuits
AURETR007	Apply knowledge of automotive electrical circuits and wiring systems
AURETR009	Install vehicle lighting and wiring systems
AURETR010	Repair wiring harnesses and looms
AURETR011	Install basic ancillary electrical systems and components
AURETR016	Read and apply vehicle wiring schematics and drawings
AURETR024	Diagnose and repair compression ignition engine management systems
AURETR028	Diagnose and repair instruments and warning systems
AURETR032	Diagnose and repair automotive electrical systems
AURETR043	Diagnose and repair electronic body management systems

Target Group

The skill set targets automotive light vehicle mechanical technicians who require the skills and knowledge to enable them to diagnose and repair electrical faults in contemporary vehicles in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive light vehicle mechanical technicians required to diagnose and repair electrical faults in contemporary vehicles.

Custom Content Section

Not applicable.

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AURSS00030 Automotive LNG Installation, Service and Repair Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS00007 Automotive LNG Installation, Service and Repair Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for installing, servicing and repairing automotive LNG systems in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of one of the following:

- AUR30316 Certificate III in Automotive Electrical Technology or equivalent
- AUR30416 Certificate III in Agricultural Mechanical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent
- AUR31116 Certificate III in Heavy Commercial Vehicle Mechanical Technology or equivalent
- AUR31216 Certificate III in Mobile Plant Technology or equivalent
- AUR31716 Certificate III in Forklift Technology or equivalent
- AUR31916 Certificate III in Elevating Work Platform Technology or equivalent

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

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Skill Set Requirements

A total of **3 units of competency** must be completed.

Units	
AURTTL004	Inspect and service LNG fuel systems
AURTTL005	Diagnose and repair LNG fuel systems
AURTTL006	Install LNG fuel systems

Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to install, service and repair LNG systems and components in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to install, service and repair automotive LNG systems.

Custom Content Section

Not applicable.

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AURSS00031 Automotive LNG Service and Repair Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS00008 Automotive LNG Service and Repair Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for servicing and repairing automotive LNG systems in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of one of the following:

- AUR30316 Certificate III in Automotive Electrical Technology or equivalent
- AUR30416 Certificate III in Agricultural Mechanical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent
- AUR31116 Certificate III in Heavy Commercial Vehicle Mechanical Technology or equivalent
- AUR31216 Certificate III in Mobile Plant Technology or equivalent
- AUR31716 Certificate III in Forklift Technology or equivalent
- AUR31916 Certificate III in Elevating Work Platform Technology or equivalent

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **2 units of competency** must be completed.

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Units	
AURTTL004	Inspect and service LNG fuel systems
AURTTL005	Diagnose and repair LNG fuel systems

Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to service and repair LNG systems and components in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to service and repair automotive LNG systems.

Custom Content Section

Not applicable.

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AURSS00032 Automotive LPG Installation, Service and Repair Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS00009 Automotive LPG Installation, Service and Repair Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for installing, servicing and repairing automotive LPG systems in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of one of the following:

- AUR30316 Certificate III in Automotive Electrical Technology or equivalent
- AUR30416 Certificate III in Agricultural Mechanical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent
- AUR31116 Certificate III in Heavy Commercial Vehicle Mechanical Technology or equivalent
- AUR31216 Certificate III in Mobile Plant Technology or equivalent
- AUR31716 Certificate III in Forklift Technology or equivalent
- AUR31916 Certificate III in Elevating Work Platform Technology or equivalent

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

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Skill Set Requirements

A total of **3 units of competency** must be completed.

Units	
AURTTL007	Inspect and service LPG fuel systems
AURTTL008	Diagnose and repair LPG fuel systems
AURTTL009	Install LPG fuel systems

Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to install, service and repair LPG systems and components in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to install, service and repair automotive LPG systems.

Custom Content Section

Not applicable.

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AURSS00033 Automotive LPG Service and Repair Skill Set

Modification History

`Release	Comment
Release 1	New skill set. Equivalent to AURSS000010 Automotive LPG Service and Repair Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for servicing and repairing automotive LPG systems in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of one of the following:

- AUR30316 Certificate III in Automotive Electrical Technology or equivalent
- AUR30416 Certificate III in Agricultural Mechanical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent
- AUR31116 Certificate III in Heavy Commercial Vehicle Mechanical Technology or equivalent
- AUR31216 Certificate III in Mobile Plant Technology or equivalent
- AUR31716 Certificate III in Forklifts Technology or equivalent
- AUR31916 Certificate III in Elevating Work Platform Technology or equivalent

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **2 units of competency** must be completed.

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Units	
AURTTL007	Inspect and service LPG fuel systems
AURTTL008	Diagnose and repair LPG fuel systems

Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to service and repair LPG systems and components in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to service and repair automotive LPG systems.

Custom Content Section

Not applicable.

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AURSS00034 Battery Electric Vehicle Diagnosis and Repair Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000011 Battery Electric Vehicle Diagnosis and Repair Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for diagnosing and repairing battery electric vehicle (BEV) systems and components in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to one of the following:

- AUR30316 Certificate III in Automotive Electrical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent

or as part of the following:

- AUR40216 Certificate IV in Automotive Mechanical Diagnosis or equivalent
- AUR40616 Certificate IV in Automotive Electrical Technology or equivalent

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **5 units of competency** must be completed.

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Units	
AURETH004	Diagnose and repair traction motor speed control systems in battery electric vehicles
AURETH005	Diagnose and repair high voltage traction motors in battery electric vehicles
AURETH006	Diagnose and repair auxiliary motors and associated components in battery electric vehicles
AURETH008	Diagnose and repair HVAC and rechargeable energy storage cooling systems in battery electric vehicles
AURETH009	Diagnose and repair DC to DC converters in battery electric vehicles

Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to diagnose and repair BEV systems and components in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to diagnose and repair battery electric vehicle systems and components.

Custom Content Section

Not applicable.

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AURSS00035 Battery Electric Vehicle Inspection and Servicing Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000012 Battery Electric Vehicle Inspection and Servicing Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for inspecting and servicing battery electric vehicle (BEV) systems and components in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to one of the following:

- AUR30316 Certificate III in Automotive Electrical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent

or as part of one of the following:

- AUR40216 Certificate IV in Automotive Mechanical Diagnosis or equivalent
- AUR40616 Certificate IV in Automotive Electrical Technology or equivalent.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **4 units of competency** must be completed.

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Units	
AURETH001	Depower and reinitialise battery electric vehicles
AURETH002	Service and maintain battery electric vehicles
AURETH003	Diagnose and repair high voltage rechargeable energy storage systems in battery electric vehicles
AURETH007	Diagnose and repair system instrumentation and safety interlocks in battery electric vehicles

Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to inspect and service BEV systems and components in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to inspect and service battery electric vehicle systems and components.

Custom Content Section

Not applicable.

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AURSS00036 Heavy Commercial Vehicle Skill Set for Light Vehicle Technicians

Modification History

Release	Comment
Release 2	Replacement of superseded unit
Release 1	New skill set. Equivalent to AURSS000013 Heavy Commercial Vehicle Skill Set for Light Vehicle Technicians. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for light vehicle mechanical technicians to diagnose and repair heavy commercial vehicles in the road transport industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of :

- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **12 units of competency** must be completed.

Units

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Units	
AURETR022	Diagnose and repair vehicle dynamic control systems
AURETR024	Diagnose and repair compression ignition engine management systems
AURHTB001	Diagnose and repair heavy vehicle air braking systems
AURHTD002	Diagnose and repair heavy commercial vehicle steering systems
AURHTD003	Diagnose and repair heavy commercial vehicle suspension systems
AURHTE002	Diagnose and repair heavy vehicle compression ignition engines
AURHTQ003	Diagnose and repair heavy vehicle drive shafts
AURHTX001	Diagnose and repair heavy vehicle manual transmissions
AURHTZ001	Diagnose and repair heavy vehicle emission control systems
AURTTA006	Inspect and service hydraulic systems
AURTTF002	Inspect and service diesel fuel injection systems
AURTTF005	Diagnose and repair engine forced-induction systems

Target Group

The skill set targets automotive light vehicle mechanical technicians who require the skills and knowledge to enable them to diagnose and repair heavy commercial vehicles in the road transport industry.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive light vehicle mechanical technicians required to diagnose and repair heavy commercial vehicles in the road transport industry.

Custom Content Section

Not applicable.

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AURSS00037 Hybrid Electric Vehicle Inspection and Servicing Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000014 Hybrid Electric Vehicle Inspection and Servicing Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for inspecting and servicing hybrid electric vehicle (HEV) systems and components in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to:

- AUR30316 Certificate III in Automotive Electrical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent

or as part of one of the following:

- AUR40216 Certificate IV in Automotive Mechanical Diagnosis or equivalent
- AUR40616 Certificate IV in Automotive Electrical Technology or equivalent.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **3 units of competency** must be completed.

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Units	
AURETH010	Diagnose and repair high voltage rechargeable energy storage systems in hybrid electric vehicles
AURETH011	Depower and reinitialise hybrid electric vehicles
AURETH012	Service and maintain electrical components in hybrid electric vehicles

Target Group

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to inspect and service hybrid electric vehicle systems and components.

Custom Content Section

Not applicable.

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AURSS00038 Mobile Plant Skill Set for Agricultural Equipment Technicians

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000015 Mobile Plant Skill Set for Agricultural Equipment Technicians. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for agricultural equipment technicians to diagnose and repair mobile plant equipment in the construction and mining industries.

Pathways Information

The skill set may only be undertaken in addition to or as part of the following:

- AUR30416 Certificate III in Agricultural Mechanical Technology or equivalent.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **7 units of competency** must be completed.

Units	
AURETR024	Diagnose and repair compression ignition engine management

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Units	
	systems
AURKTA005	Inspect, service and repair track type drive and support systems
AURKTD002	Diagnose and repair mobile plant steering systems
AURKTQ001	Diagnose and repair mobile plant final drive assemblies
AURTTA006	Inspect and service hydraulic systems
AURTTF005	Diagnose and repair engine forced-induction systems
AURTTX006	Diagnose and repair hydrostatic transmissions

Target Group

The skill set targets automotive agricultural equipment technicians who require the skills and knowledge to enable them to diagnose and repair mobile plant equipment in the construction and mining industries.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive agricultural equipment technicians required to diagnose and repair mobile plant equipment in the construction and mining industries.

Custom Content Section

Not applicable.

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AURSS00039 Mobile Plant Skill Set for Heavy Commercial Vehicle Technicians

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000016 Mobile Plant Skill Set for Heavy Commercial Vehicle Technicians. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for heavy commercial vehicle technicians to diagnose and repair mobile plant equipment in the construction and mining industries.

Pathways Information

The skill set may only be undertaken in addition to or as part of the following;

- AUR31116 Certificate III in Heavy Commercial Vehicle Mechanical Technology or equivalent.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **8 units of competency** must be completed.

Units	
AURHTF002	Diagnose and repair heavy vehicle diesel fuel injection systems

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Units	
AURKTA005	Inspect, service and repair track type drive and support systems
AURKTA011	Diagnose and repair mobile plant hydraulic systems
AURKTB001	Diagnose and repair mobile plant braking systems
AURKTD002	Diagnose and repair mobile plant steering systems
AURKTQ001	Diagnose and repair mobile plant final drive assemblies
AURKTX001	Diagnose and repair powershift transmissions
AURTTX006	Diagnose and repair hydrostatic transmissions

Target Group

The skill set targets and automotive heavy commercial vehicle technicians who require the skills and knowledge to enable them to diagnose and repair mobile plant equipment in the construction and mining industries.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive heavy commercial vehicle technicians required to diagnose and repair mobile plant equipment in the construction and mining industries.

Custom Content Section

Not applicable.

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AURSS00040 Mobile Plant Skill Set for Light Vehicle Technicians

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000017 Mobile Plant Skill Set for Light Vehicle Technicians. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for automotive light vehicle mechanical technicians to diagnose and repair mobile plant equipment in the construction and mining industries.

Pathways Information

The skill set may only be undertaken in addition to or as part of the following:

- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **11 units of competency** must be completed.

Units	
AURHTE002	Diagnose and repair heavy vehicle compression ignition engines
AURHTF002	Diagnose and repair heavy vehicle diesel fuel injection systems

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Units	
AURKTA005	Inspect, service and repair track type drive and support systems
AURKTA011	Diagnose and repair mobile plant hydraulic systems
AURKTB001	Diagnose and repair mobile plant braking systems
AURKTD002	Diagnose and repair mobile plant steering systems
AURKTQ001	Diagnose and repair mobile plant final drive assemblies
AURKTX001	Diagnose and repair powershift transmissions
AURTTA006	Inspect and service hydraulic systems
AURTTF005	Diagnose and repair engine forced-induction systems
AURTTX006	Diagnose and repair hydrostatic transmissions

Target Group

The skill set targets automotive light vehicle mechanical technicians who require the skills and knowledge to enable them to diagnose and repair mobile plant equipment in the construction and mining industries.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive light vehicle mechanical technicians required to diagnose and repair mobile plant equipment in the construction and mining industries.

Custom Content Section

Not applicable.

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AURSS00041 Vehicle Air Conditioning Install and Overhaul Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000018 Vehicle Air Conditioning Install and Overhaul Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for installing and overhauling air conditioning system components of vehicles in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of one of the following:

- AUR20216 Certificate II in Automotive Air Conditioning Technology or equivalent
- AUR20416 Certificate II in Automotive Electrical Technology or equivalent
- AUR21416 Certificate II in Automotive Cooling System Technology or equivalent
- AUR30316 Certificate III in Automotive Electrical Technology or equivalent
- AUR30416 Certificate III in Agricultural Mechanical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent
- AUR31116 Certificate III in Heavy Commercial Vehicle Mechanical Technology or equivalent
- AUR31216 Certificate III in Mobile Plant Technology or equivalent
- AUR31716 Certificate III in Forklift Technology or equivalent

Licensing/Regulatory Information

This skill set involves licencing, legislative, regulatory or certification requirements.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

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Skill Set Requirements

A total of **2 units of competency** must be completed.

Units	
AURETU001	Install air conditioning systems
AURETU007	Overhaul air conditioning and HVAC system compressors

Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to install and overhaul automotive air conditioning system components in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to install and overhaul automotive air conditioning system components in vehicles.

Custom Content Section

Not applicable.

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AURSS00042 Vehicle Air Conditioning Installation Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000019 Vehicle Air Conditioning Installation Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for installing air conditioning systems in vehicles in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of one of the following:

- AUR20216 Certificate II in Automotive Air Conditioning Technology or equivalent
- AUR20416 Certificate II in Automotive Electrical Technology or equivalent
- AUR21416 Certificate II in Automotive Cooling System Technology or equivalent
- AUR30316 Certificate III in Automotive Electrical Technology or equivalent
- AUR30416 Certificate III in Agricultural Mechanical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent
- AUR31116 Certificate III in Heavy Commercial Vehicle Mechanical Technology or equivalent
- AUR31216 Certificate III in Mobile Plant Technology or equivalent
- AUR31716 Certificate III in Forklift Technology or equivalent

Licensing/Regulatory Information

This skill set involves licensing, legislative, regulatory or certification requirements.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

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Skill Set Requirements

A total of **1 units of competency** must be completed.

Units	
AURETU001	Install air conditioning systems

Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to install automotive air conditioning systems in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to install automotive air conditioning systems in vehicles.

Custom Content Section

Not applicable.

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AURSS00043 Vehicle Air Conditioning Overhaul Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000020 Vehicle Air Conditioning Overhaul Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for overhauling air conditioning system components of vehicles in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of one of the following:

- AUR20216 Certificate II in Automotive Air Conditioning Technology or equivalent
- AUR20416 Certificate II in Automotive Electrical Technology or equivalent
- AUR21416 Certificate II in Automotive Cooling System Technology or equivalent
- AUR30316 Certificate III in Automotive Electrical Technology or equivalent
- AUR30416 Certificate III in Automotive Mechanical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent
- AUR31116 Certificate III in Heavy Commercial Vehicle Mechanical Technology or equivalent
- AUR31216 Certificate III in Mobile Plant Technology or equivalent
- AUR31716 Certificate III in Forklift Technology or equivalent

Licensing/Regulatory Information

This skill set involves licensing, legislative, regulatory or certification requirements.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

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Skill Set Requirements

A total of **1 units of competency** must be completed.

Units	
AURETU007	Overhaul air conditioning and HVAC system compressors

Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to overhaul automotive air conditioning system components in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to overhaul automotive air conditioning system components in vehicles.

Custom Content Section

Not applicable.

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AURSS00044 Vehicle Air Conditioning Service, Retrofit and Repair Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000021 Vehicle Air Conditioning Service, Retrofit and Repair Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for servicing, diagnosing and repairing faults, and retrofitting and modifying air conditioning and HVAC systems of vehicles in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of one of the following:

- AUR20216 Certificate II in Automotive Air Conditioning Technology or equivalent
- AUR20416 Certificate II in Automotive Electrical Technology or equivalent
- AUR21416 Certificate II in Automotive Cooling System Technology or equivalent
- AUR30316 Certificate III in Automotive Electrical Technology or equivalent
- AUR30416 Certificate III in Agricultural Mechanical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent
- AUR31116 Certificate III in Heavy Commercial Vehicle Mechanical Technology or equivalent
- AUR31216 Certificate III in Mobile Plant Technology or equivalent
- AUR31716 Certificate III in Forklift Technology or equivalent

Licensing/Regulatory Information

This skill set involves licensing, legislative, regulatory or certification requirements.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

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Skill Set Requirements

A total of **3 units of competency** must be completed.

Units	
AURETU003	Service air conditioning and HVAC systems
AURETU004	Diagnose and repair air conditioning and HVAC systems
AURETU005	Retrofit and modify air conditioning and HVAC systems

Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to service, diagnose and repair, and retrofit and modify automotive air conditioning and HVAC systems in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to service, diagnose and repair, and retrofit and modify automotive air conditioning and HVAC systems.

Custom Content Section

Not applicable.

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AURSS00045 Vehicle Refrigerant Recovery Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000022 Vehicle Refrigerant Recovery Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for recovering air conditioning refrigerants from vehicles in the automotive retail, service and repair industry.

Pathways Information

The skill set may be undertaken in addition to or as part of an automotive qualification or as a stand alone skill set.

Licensing/Regulatory Information

This skill set involves licensing, legislative, regulatory or certification requirements.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **1 units of competency** must be completed.

Units	
AURETU002	Recover vehicle refrigerants

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Target Group

This skill set targets persons working in an automotive parts dismantler/parts recycler workplace or those working in the automotive industry that require the skills and knowledge to recover vehicle refrigerants from end of life vehicles in an automotive workplace.

Suggested words for Statement of Attainment

This unit of competency is drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of those employed within an automotive parts dismantler/parts recycler/vehicle wrecking yard.

Custom Content Section

Not applicable.

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AURSS00046 Advanced Body Repair Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000023 Advanced Body Repair Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for body repair technicians to conduct advanced body repairs in the automotive body repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of the following:

- AUR32116 Certificate III in Automotive Body Repair Technology or equivalent

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **6 units of competency** must be completed.

Units	
AURETH011	Depower and reinitialise hybrid electric vehicles
AURVTA002	Remove and replace vehicle supplementary restraint systems
AURVTN023	Repair adhesive bonded structural damage on vehicles

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Units	
AURVTN028	Identify and repair high strength steel vehicle components
AURVTN029	Set up and operate universal vehicle measuring systems
AURVTN035	Apply original equipment manufacturer repair procedures during vehicle repairs

Target Group

The skill set targets automotive body repair technicians who require the skills and knowledge to conduct advanced body repairs.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive body repair technicians required to conduct advanced repairs.

Custom Content Section

Not applicable.

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AURSS00047 Advanced Body Repair Welding Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000024 Advanced Body Repair Welding Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for body repair technicians to conduct advanced body repair welding in the automotive body repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of the following:

- AUR32116 Certificate III in Automotive Body Repair Technology or equivalent.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **3 units of competency** must be completed.

Units	
AURTTA020	Apply heat induction processes
AURVTW003	Carry out advanced gas metal arc welding on vehicle body sections

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Units	
AURVTW005	Carry out spot welding

Target Group

The skill set targets automotive body repair technicians who require the skills and knowledge to conduct advanced body repair welding.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive body repair technicians required to conduct advanced body repair welding.

Custom Content Section

Not applicable.

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AURSS00048 Advanced Vehicle Refinishing Skill Set

Modification History

Release	Comment
Release 1	New skill set. Equivalent to AURSS000025 Advanced Vehicle Refinishing Skill Set. Skill set structure unchanged. Units upgraded to reflect new standards for Training Packages.

Description

This is a skill set covering the fundamental requirements for automotive refinishing technicians to conduct advanced refinishing activities in the automotive body repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of the following:

- AUR32416 Certificate III in Automotive Refinishing Technology or equivalent

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **5 units of competency** must be completed.

Units	
AURETH011	Depower and reinitialise hybrid electric vehicles
AURVTN035	Apply original equipment manufacturer repair procedures during vehicle repairs

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Units	
AURVTP018	Rectify vehicle multi-layer and pearl paint faults using two-pack systems
AURVTP024	Apply clear over base multi-layer and pearl refinishing materials to vehicle body components
AURVTP025	Apply water-based refinishing materials to vehicle bodies and substrates

Target Group

The skill set targets automotive refinishing technicians who require the skills and knowledge to conduct advanced refinishing activities.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive refinishing technicians required to conduct advanced refinishing activities.

Custom Content Section

Not applicable.

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AURSS00049 Vehicle Climate Control and HVAC Diagnostic Specialist Skill Set

Modification History

Release	Comment
Release 1	New skill set.

Description

This is a skill set covering the requirements for advanced diagnosis of vehicle climate control, heating ventilation and air conditioning (HVAC) systems and rechargeable energy storage systems (RESS) cooling systems in battery electric vehicles (BEVs) in the automotive retail, service and repair industry.

Pathways Information

The skill set may only be undertaken in addition to or as part of the following:

- AUR20216 Certificate II in Automotive Air Conditioning Technology or equivalent and the trainee must hold of a current ARC Refrigerant Handling License (RHL).

Licensing/Regulatory Information

This skill set involves licencing, legislative, regulatory or certification requirements.

Readers should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

A total of **4 units of competency** must be completed.

Units

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Units	
AURETA006	Analyse and evaluate electrical and electronic faults in air conditioning and HVAC systems
AURETH008	Diagnose and repair HVAC and rechargeable energy storage cooling systems in battery electric vehicles
AURETR020	Diagnose and repair network electronic control systems
AURETU006	Diagnose complex faults in air conditioning and HVAC systems

Target Group

The skill set targets automotive mechanical and electrical technicians who require the skills and knowledge to carry out the advanced diagnosis of automotive air conditioning, climate control and HVAC systems and RESS cooling systems of BEVs in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to carry out the advanced diagnosis of vehicle climate control, heating ventilation and air conditioning (HVAC) systems and rechargeable energy storage systems (RESS) cooling systems in battery electric vehicles.

Custom Content Section

Not applicable.

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AURSS00050 Vehicle Body Repair Estimator Skill Set

Modification History

Release	Comment
Release 1	New skill set.

Description

This is a skill set covering the fundamental requirements for vehicle body repair estimators operating in the automotive body repair industry.

Pathways Information

Entry to this skill set is limited to those who:

Have completed one of the following Certificate III qualifications:

- AUR32116 Certificate III in Automotive Body Repair Technology or equivalent
- AUR32216 Certificate III in Automotive Glazing Technology or equivalent
- AUR32416 Certificate III in Automotive Refinishing Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent
- AUR30316 Certificate III in Automotive Electrical Technology or equivalent

Or

Have five years equivalent relevant full time workplace experience in a motor trade or as an estimator.

Licensing/Regulatory Information

No licencing, legislative or certificate requirements apply to this skill set at the time of publication.

Skill Set Requirements

A total of 3 units of competency must be completed.

Units	
AURAMA005	Manage complex customer issues in an automotive workplace

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AURANN011	Estimate and quote automotive body repairs
AURVTN035	Apply original equipment manufacturer repair procedures during vehicle repairs

Target Group

The skill set targets light vehicle and heavy vehicle body repair technicians who require the skills and knowledge to undertake vehicle body repair estimates.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of vehicle body repair estimators required to prepare estimates and quotes.

Custom Content Section

Not applicable.

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AURSS00051 Marine Transition Skill Set

Modification History

Release	Comment
Release 1	New skill set.

Description

This is a skill set covering the fundamental skills required for automotive mechanical technicians to transition to work in the marine retail, service and repair sector. The skill set builds on the skills and capabilities an automotive mechanical technician already has and provides individuals with core skills in marine retail, service and repair.

Pathways Information

The skill set may only be undertaken in addition to:

- AUR30416 Certificate III in Agricultural Mechanical Technology or equivalent
- AUR30316 Certificate III in Automotive Electrical Technology or equivalent
- AUR30916 Certificate III in Heavy Commercial Vehicle Mechanical Technology or equivalent
- AUR30816 Certificate III in Motorcycle Mechanical Technology or equivalent
- AUR30616 Certificate III in Light Vehicle Mechanical Technology or equivalent
- AUR31416 Certificate III in Automotive Diesel Fuel Technology or equivalent
- AUR31216 Certificate III in Mobile Plant Technology or equivalent
- AUR31516 Certificate III in Automotive Drivetrain Technology or equivalent
- AUR31316 Certificate III in Automotive Engine Reconditioning or equivalent
- AUR31816 Certificate III in Heavy Commercial Trailer Technology or equivalent
- AUR31616 Certificate III in Automotive Drivetrain Technology or equivalent
- AUR31716 Certificate III in Forklift Technology or equivalent
- AUR30916 Certificate III in Motor Sport Technology or equivalent

Licensing/Regulatory Information

No licencing, legislative or certificate requirements apply to this skill set at the time of publication.

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Skill Set Requirements

A total of 6 **units of competency** must be completed.

Units	
AURRTC001	Diagnose and repair marine exhaust and cooling systems
AURRTE002	Inspect and service marine outboard engines
AURRTE008	Install marine engines, controls and instruments
AURRTR006	Diagnose and repair marine electrical systems
AURRTX003	Diagnose and repair marine outboard and stern drive transmissions
AURRTX004	Diagnose and repair marine inboard transmissions

Target Group

The skill set targets automotive mechanical technicians who are seeking to transition into marine retail, service and repair occupations, and require the skills and knowledge to apply their automotive skills to marine specific activities.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical technicians transitioning into occupations in the marine retail, service and repair sector.

Custom Content Section

Not applicable.

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AURSS00052 Light Vehicle Wheel Alignment Skill Set

Modification History

Code and title current version	Code and title previous version	Comments	Equivalence status
AURSS00052 Light Vehicle Wheel Alignment Skill Set (Release 1)	Not applicable	New skill set	No equivalent skill set

Description

This is a skill set covering the fundamental requirements for performing wheel alignment on light vehicles.

Pathways Information

This skill set may only be undertaken in addition to or as part of the following:

- AUR21916 Certificate II in Automotive Tyre Servicing Technology, AUR30616 Certificate III in Light Vehicle Mechanical Technology, AUR32518 Certificate III in Automotive Underbody Technology or equivalent, including:
  - AURLTJ011 Select light vehicle tyres and wheels for specific applications
  - AURLTJ002 Remove, inspect, repair and refit light vehicle tyres and tubes
  - AURLTJ013 Remove, inspect and refit light vehicle wheel and tyre assemblies
  -

Licensing/Regulatory Information

Licensing, legislative or certificate requirements may apply to this skill set at the time of publication.

Skill Set Requirements

A total of **4 units of competency** must be completed.

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Units	
AURLTD006	Carry out light vehicle wheel alignment operations
AURTTD002	Inspect and service steering systems
AURTTD004	Inspect and service suspension systems
AURTTJ011	Balance wheels and tyres

Target Group

The skill set targets learners who require the skills and knowledge to undertake wheel alignment on light vehicles.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of workers required to perform wheel alignment on light vehicles.

Custom Content Section

Not applicable.

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AURSS00053 Heavy Vehicle Wheel Alignment Skill Set

Modification History

Code and title current version	Code and title previous version	Comments	Equivalence status
AURSS00053 Heavy Vehicle Wheel Alignment Skill Set (Release 1)	Not applicable	New skill set	No equivalent skill set

Description

This is a skill set covering the fundamental requirements for performing wheel alignment on heavy vehicles.

Pathways Information

This skill set may only be undertaken in addition to or as part of the following:

- AUR21916 Certificate II in Automotive Tyre Servicing Technology, AUR31118 Certificate III in Heavy Commercial Vehicle Mechanical Technology, AUR31818 Certificate III in Heavy Commercial Trailer Technology or equivalent, including:
  - AURHTJ002 Select heavy vehicle tyres, wheels and rims for specific applications
  - AURHTJ003 Remove, inspect and refit heavy vehicle wheel and tyre assemblies
  - AURHTJ006 Remove, inspect, repair and refit heavy vehicle tyres and tubes
  -

Licensing/Regulatory Information

Licensing, legislative or certificate requirements may apply to this skill set at the time of publication.

Skill Set Requirements

A total of 4 units of competency must be completed.

Units

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AURHTD004	Carry out heavy vehicle wheel alignment operations
AURTTD002	Inspect and service steering systems
AURTTD004	Inspect and service suspension systems
AURTTJ011	Balance wheels and tyres

Target Group

The skill set targets learners who require the skills and knowledge to undertake wheel alignment on heavy vehicles.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of workers required to perform wheel alignment on heavy vehicles.

Custom Content Section

Not applicable.

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AURSS00054 Light Vehicle Automatic Driveline Technology Skill Set

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Description

This skill set addresses the skills and knowledge required to perform a range of tasks on light vehicle automatic drivelines in the automotive retail, service and repair industry.

This skill set may only be undertaken in addition to, or as part of any Certificate III or higher in AUR Automotive Retail, Service and Repair Training Package.

Pathways Information

The units in this skill set provide credit towards:

- AUR31120 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR30920 Certificate III in Motor sport Technology
- AUR30620 Certificate III in Light Vehicle Mechanical Technology
- AUR30320 Certificate III in Automotive Electrical Technology
- AUR40320 Certificate IV in Motor Sport Technology
- AUR40820 Certificate IV in Automotive Mechanical Overhauling
- any other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

AURETR144 Diagnose and repair integrated engine and transmission management systems

AURLTX102 Diagnose and repair light vehicle automatic transmissions

AURTTX009 Overhaul automatic transmissions

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Target Group

This skill set is for individuals who interact with light vehicle automatic drivelines in the automotive retail, service and repair industry.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of workers required to perform a range of tasks on light vehicle automatic drivelines.

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AURSS00055 Heavy Vehicle Automatic Driveline Technology Skill Set

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Description

This skill set addresses the skills and knowledge required to perform a range of tasks on heavy vehicle automatic drivelines in the automotive retail, service and repair industry.

This skill set may only be undertaken in addition to, or as part of, any Certificate III or higher in AUR Automotive Retail, Service and Repair Training Package.

Pathways Information

The units in this skill set provide credit towards:

- AUR31120 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR30920 Certificate III in Motor sport Technology
- AUR30620 Certificate III in Light Vehicle Mechanical Technology
- AUR30320 Certificate III in Automotive Electrical Technology
- AUR40320 Certificate IV in Motor Sport Technology
- AUR40820 Certificate IV in Automotive Mechanical Overhauling
- any other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

AURETR144 Diagnose and repair integrated engine and transmission management systems

AURHTX103 Diagnose and repair heavy vehicle automatic transmissions

AURTTX009 Overhaul automatic transmissions

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Target Group

This skill set is for individuals who interact with heavy vehicle automatic drivelines in the automotive retail, service and repair industry.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of workers required to perform a range of tasks on heavy vehicle automatic drivelines.

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AURSS00056 Light Vehicle Manual Driveline Technology Skill Set

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Description

This skill set addresses the skills and knowledge required to perform a range of tasks on light vehicle manual drivelines in the automotive retail, service and repair industry.

This skill set may only be undertaken in addition to, or as part of, any Certificate III or higher in AUR Automotive Retail, Service and Repair Training Package.

Pathways Information

The units in this skill set provide credit towards:

- AUR30620 Certificate III in Light Vehicle Mechanical Technology
- AUR30820 Certificate III in Motorcycle Mechanical Technology
- AUR30920 Certificate III in Motor Sport Technology
- AUR32518 Certificate III in Automotive Underbody Technology
- AUR30620 Certificate III in Light Vehicle Mechanical Technology
- AUR30720 Certificate III in Outdoor Power Equipment
- AUR40320 Certificate IV in Motor Sport Technology, and
- any other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

AURLTQ101 Diagnose and repair light vehicle final drive assemblies

AURLTQ102 Diagnose and repair light vehicle drive shafts

AURLTX101 Diagnose and repair light vehicle manual transmissions

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AURTTX008 Overhaul manual transmissions

Target Group

This skill set is for individuals who interact with light vehicle manual drivelines in the automotive retail, service and repair industry.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of workers required to perform a range of tasks on light vehicle manual drivelines.

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AURSS00057 Heavy Vehicle Manual Driveline Technology Skill Set

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Description

This skill set addresses the skills and knowledge required to perform a range of tasks on heavy vehicle manual drivelines in the automotive retail, service and repair industry.

This skill set may only be undertaken in addition to, or as part of, any Certificate III or higher in AUR Automotive Retail, Service and Repair Training Package.

Pathways Information

The units in this skill set provide credit towards:

- AUR31120 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR30420 Certificate III in Agricultural Mechanical Technology
- AUR31220 Certificate III in Mobile Plant Technology
- AUR30620 Certificate III in Light Vehicle Mechanical Technology
- AUR30720 Certificate III in Outdoor Power Equipment
- AUR30920 Certificate III in Motor Sport Technology
- AUR40320 Certificate IV in Motor Sport Technology
- any other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

AURHTQ102 Diagnose and repair heavy commercial vehicle final drive assemblies

AURHTQ103 Diagnose and repair heavy vehicle drive shafts

AURHTX101 Diagnose and repair heavy vehicle manual transmissions

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AURTTX008 Overhaul manual transmissions

Target Group

This skill set is for individuals who interact with heavy vehicle manual drivelines in the automotive retail, service and repair industry.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of workers required to perform a range of tasks on heavy vehicle manual drivelines.

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AURSS00058 LPG Fuel Systems Skill Set

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Description

This skill set addresses the skills and knowledge required to service and repair automotive LPG fuel systems in the automotive retail, service and repair industry. This skill set may only be undertaken in addition to, or as part of, any Certificate III or higher in AUR Automotive Retail, Service and Repair Training Package.

Pathways Information

The units in this skill set provide credit towards:

- AUR30320 Certificate III in Automotive Electrical Technology
- AUR30420 Certificate III in Agricultural Mechanical Technology
- AUR30620 Certificate III in Light Vehicle Mechanical Technology
- AUR31120 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR31220 Certificate III in Mobile Plant Technology
- any other qualifications that allow for selection of these units.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Skill set users should also refer to the Companion Volume Implementation Guide, which outlines licensing and regulatory requirements.

Skill Set Requirements

AURTTL007 Inspect and service LPG fuel systems

AURTTL108 Diagnose and repair LPG fuel systems

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Target Group

The skill set is for automotive mechanical and electrical technicians who require the skills and knowledge to service and repair LPG fuel systems and components in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to service and repair automotive LPG fuel systems.

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AURSS00059 LNG Fuel Systems Skill Set

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Description

This skill set addresses the skills and knowledge to required service nd repair automotive LNG fuel systems in the automotive retail, service and repair industry. This skill set may only be undertaken in addition to, or as part of, any Certificate III or higher in AUR Automotive Retail, Service and Repair Training Package.

Pathways Information

The units in this skill set provide credit towards:

- AUR30320 Certificate III in Automotive Electrical Technology
- AUR30420 Certificate III in Agricultural Mechanical Technology
- AUR30620 Certificate III in Light Vehicle Mechanical Technology
- AUR31120 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR31220 Certificate III in Mobile Plant Technology
- any other qualifications that allow for selection of these units.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Skill set users should also refer to the Companion Volume Implementation Guide, which outlines licensing and regulatory requirements.

Skill Set Requirements

AURTTL104 Inspect and service LNG fuel systems

AURTTL105 Diagnose and repair LNG fuel systems

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Target Group

The skill set is for automotive mechanical and electrical technicians who require the skills and knowledge to service and repair LNG fuel systems and components in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to service and repair automotive LNG fuel systems.

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AURSS00060 CNG Fuel Systems Skill Set

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Description

This skill set addresses the skills and knowledge required to service and repair automotive CNG fuel systems in the automotive retail, service and repair industry. This skill set may only be undertaken in addition to, or as part of, any Certificate III or higher in AUR Automotive Retail, Service and Repair Training Package.

Pathways Information

The units in this skill set provide credit towards:

- AUR30320 Certificate III in Automotive Electrical Technology
- AUR30420 Certificate III in Agricultural Mechanical Technology
- AUR30620 Certificate III in Light Vehicle Mechanical Technology
- AUR31120 Certificate III in Heavy Commercial Vehicle Mechanical Technology
- AUR31220 Certificate III in Mobile Plant Technology
- any other qualifications that allow for selection of these units.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Skill set users should also refer to the Companion Volume Implementation Guide, which outlines licensing and regulatory requirements.

Skill Set Requirements

AURTTL001 Inspect and service CNG fuel systems

AURTTL102 Diagnose and repair CNG fuel systems

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Target Group

The skill set is for automotive mechanical and electrical technicians who require the skills and knowledge to service and repair CNG fuel systems and components in an automotive workplace.

Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to service and repair automotive CNG fuel systems.

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AURSS00061 Motorsports Marketing Skill Set

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Description

This skill set addresses the skills and knowledge required to market and promote motorsport events and team activities in the automotive retail, service and repair industry.

This skill set may only be undertaken in addition to, or as part of, any Certificate III or higher in AUR Automotive Retail, Service and Repair Training Package.

Pathways Information

The units in this skill set provide credit towards:

- AUR40320 Certificate IV in Motor Sport Technology
- any other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

AURMCA101 Manage motor sport team media liaison

AURMCA102 Manage motor sport team promotional partnerships and marketing

BSBMKG412 Conduct e-marketing communications

BSBMKG413 Promote products and services

Target Group

This skill set is for individuals who market and promote motorsports events and team activities in the automotive retail, service and repair industry.

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Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of workers required to market and promote motorsports events and team activities.

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AURSS00062 Electric Bicycles Skill Set

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Description

This skill set addresses the skills and knowledge required to service and repair electric bicycles in the automotive retail, service and repair industry.

Pathways Information

The units in this skill set provide credit towards:

- AUR20320 Certificate II in Bicycle Mechanical Technology
- AUR30220 Certificate III in Bicycle Workshop Operations
- any other qualifications that allow for selection of these units.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this skill set.

Skill set users should ensure that they have also read the part of the Training Package that outlines licensing and regulatory requirements.

Skill Set Requirements

AURBTR101 Inspect and service electric power-assisted bicycles

AURBTR103 Retrofit electric drivetrain systems to bicycles

AURBTR104 Diagnose and repair electric bicycles

Target Group

The skill set is for automotive mechanical and electrical technicians who require the skills and knowledge to service and repair electric bicycles in the automotive retail, service and repair industry.

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Suggested words for Statement of Attainment

These units of competency are drawn from the AUR Automotive Retail, Service and Repair Training Package and meet the needs of automotive mechanical and electrical technicians required to service and repair automotive electric bicycles.

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